BULLETIN OF MISCELLANEOUS INFORMATION Appendix 1935
ROYAL BOTANIC GARDENS, KEW

REVIEW OF THE WORK OF THE ROYAL BOTANIC GARDENS, KEW, DURING 1935.

General

STAFF.—During the period of activity of the Empire Marketing Board additional Herbarium staff was appointed, with the aid of a grant from the Board, primarily in order to deal with the increased volume of collections from the Dominions and Colonies which other grants from the Board for overseas collections had stimulated. The following members of the staff, formerly employed under the auspices of the Board, have now been appointed to the permanent staff: Mr. C. E. HUBBARD and Mr. E. W. B. H. MILNE-REDHEAD (Botanists), Mr. H. K. AIRY-SHAW and Miss C. I. DICKINSON (Assistant Botanists), and four Preparers.

Permanent posts with the title of Sub-Assistant have been created to take the place of part of the former grant for Temporary Technical Assistance.

The title of Sub-foreman has been altered to that of Foreman.

Mr. W. DALLIMORE, V.M.H., Keeper of the Museums, received the Honour of the I.S.O. in the King's Birthday and Jubilee Honours.

By command of H.M. The King, the DIRECTOR, Mr. A. D. COTTON, O.B.E., and Mr. J. T. HAZEL, were honoured with the award of the Silver Jubilee Medal.

Sir DAVID PRAIN, Director of the Gardens from 1905 to 1922, received the Honour of the Linnean Gold Medal at the Anniversary meeting of the Linnean Society.

THE DIRECTOR was elected a Corresponding Member of the Netherlands Botanical Society at the meeting of the Sixth International Botanical Congress at Amsterdam, and has also been made an Honorary Member of the Orchid Circle of Ceylon.

OFFICIAL VISITS.—THE DIRECTOR and THE KEEPER OF THE HERBARIUM represented the Royal Botanic Gardens, Kew, at the Tercentenary Celebration of the Muséum National d'Histoire Naturelle at Paris from June 24th to 29th. An illuminated address from the Royal Botanic Gardens was presented by the Director; he was also entrusted with the honour of delivering a discourse at the Séance Solennelle in the name of all the Foreign Delegates.

The Sixth International Botanical Congress, 1935.—The Director and eight members of the Herbarium staff, including the Botanist for South Africa, attended this Congress at Amsterdam in September. The Director was Head of the British Government Delegation, and the Keeper and Deputy Keeper of the Herbarium represented the Ministry of Agriculture and Fisheries. The Director was invited to deliver an address of thanks on behalf of all the foreign delegates. The following members of the staff read papers: Mr. Cotton, Miss Wakefield, Dr. Turrill, and Dr. Hutchinson.

As Rapporteur Géneral, Dr. Sprague prepared the "Synopsis of Proposals concerning Nomenclature" and "Preliminary Opinions concerning Nomenclature Proposals" submitted to the Congress and took a prominent part in the discussions on nomenclature. Miss M. L. Green, as Secretary for English, was responsible for the detailed English report of the nomenclature proceedings. All the members of the Kew staff attending the Congress had important duties as members of various committees.

Plant and Seed Introduction.—In the Annual Review for 1933, the publication of a list of the crop plants cultivated throughout the Empire was foreshadowed. The work of compilation has been completed during the year and the results have been published under the title "Cultivated Crop Plants of the British Empire and the Anglo-Egyptian Sudan (Tropical & Sub-Tropical)," by H. C. Sampson, Economic Botanist, Royal Botanic Gardens, Kew.*

The Third Imperial Botanical Conference, 1935, was held in the rooms of the Linnean Society, Burlington House, from August 28th to 30th. The Director was President of the Conference and several members of the staff attended. On August 30th, the delegates visited Kew and were entertained to luncheon by His Majesty's Government, and subsequently were conducted by the Director and members of the staff through the Gardens, Museums and Herbarium. A Report of the Proceedings (price 1/-) has been published and may be obtained from the Director, Royal Botanic Gardens, Kew.

Publications.—Ten numbers of the Kew Bulletin were published during the year, and the Review of the work during the year 1934 was issued as an Appendix. Four numbers (6-9) were published under one cover and were devoted to nomenclature papers in connexion with the Sixth International Botanical Congress at Amsterdam. The List of Seeds was published as a separate pamphlet.

New editions of the Popular Official Guide and Illustrated Guide were published during the year, the latter having the innovation of a coloured photograph on the cover.

Part 10 of the "Flora of the Presidency of Madras" was published in February.

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* Kew Bulletin: Additional Series XII. H.M. Stationery Office. Price 6s. 6d.

VISITORS.—The number of visitors to the Gardens in 1935 was 1,091,220—weekdays (except students' days) 574,628; students' days 58,022; Sundays 458,570—a decrease of 79,149 as compared with the figures for 1934, due largely to the destructive frost in the middle of May, when the beauty of so many flowering trees and shrubs was destroyed, and to the wet weather in June and in the early autumn. The greatest monthly attendance was in May with 195,298, and the lowest in December with 10,121. The highest daily attendance was 55,149 on Easter Monday, 22nd April; the lowest was 10 on December 24th.

GENERAL.—During the past year frost, drought and gales caused considerable damage in the Gardens. The severe frost during the night and morning of May 16th and 17th seriously injured the young growths of trees and shrubs, whilst in many cases the floral display was completely ruined for the season (a full account of the effect of this frost will appear in *K.B.* 1936, no. 1). Fortunately, however, the great majority of plants do not appear to have suffered permanent injury. As a climax to a far from satisfactory season came the gale of September 6th, which caused widespread damage. Although only a few trees were uprooted, seldom has there been such general damage to all classes of trees in the way of broken limbs and branches. The principal injury to trees occurred on and around the Seven Sisters Lawn, where two large Lombardy poplars were blown down, damaging other trees in their fall, and *Populus generosa*, *P. marylandica* and *Quercus sessiliflora* var. *mespilifolia* suffered severe damage, the tree of *P. generosa* being reduced to the main trunk.

On the whole the summer was characterised by showery weather relieved by one short, hot spell. Heavy rains fell during the autumn and early winter. The water consumption for the year amounted to 25,638,000 gallons as compared with 31,731,000 gallons in 1934.

DECORATIVE DEPARTMENT.—In the Rose Garden the six beds on the upper level have been cleared of shrubs and planted with roses, thus completing the Rose Garden scheme. House 4 was reconditioned where necessary and repainted inside and out with the exception of the exterior of the wings. In the Melon Yard the exterior and interior of Houses 23, 23A and 18E were painted, likewise the exterior of Pits 18C and 18H.

HERBACEOUS DEPARTMENT.—The sides of the bank at the south end of the Herbaceous Ground on either side of the central pathway has been sloped off, giving a shallow, valley-like effect and improving the view of the Temple of Aeolus and the Mound from the Herbaceous Ground. The dressed granite steps in the Rock Garden, which were

out of keeping with the general surroundings, have been replaced by steps of rough, undressed sandstone. At the same time, the path leading down from the Orchid House side of the Rock Garden has been reconstructed in order to screen the houses from the Rock Garden. Among the more interesting plants which flowered in this department during the past year were *Cypripedium guttatum, C. candidum, Fritillaria biflora, F. pluriflora, Iris innominata, Linaria ventricosa, Orobanche uniflora* and *Primula Sherriffae.*

The Water Garden.—This has been greatly improved during the past two years. The cement covering the brickwork of the raised tanks was removed last year and the tanks were re-faced with pleasantly coloured old bricks. The wall of the central tank was raised eighteen inches, making the pool a proper depth for the water-lilies. The effect on the growth and flowering of the lilies this year has been very marked. Early in the year the pathway round the central pool was paved with flagstones, greatly improving the aesthetic effect of the whole water garden.

Arboretum.—The stables have been remodelled, the old stalls being converted into separate loose boxes entered from the yard; the chimney stack of the old pumping station in the Stable Yard has been demolished.

In the Bamboo Garden the west and south sides have been extended by the formation of deeper bays which have increased the planting area and given the garden a more spacious appearance. The north-east side will be treated later in the same way.

The familiar old horse chestnut tree, surrounded by a fence by the river side near the south end of the Rhododendron Dell, with its rooted branches growing into independent trees, has had to be cut down, owing to bad infection with disease which had caused it to become very unsightly and dangerous. It will be greatly missed, but fortunately, thanks to Archdeacon Lonsdale Ragg, we have two drawings of the old tree made by him last year, which are now hanging in Museum 4. The oak collection will now be extended over the ground covered by the chestnut. The horse chestnuts which formed a group on the south-west side of the Broad Walk have been in declining health for a number of years, and were so severely damaged by the gale of September 16th that four of them had to be felled. In their place a new rhododendron bed has been made to correspond with the one on the opposite side, thus completing the design of the Broad Walk throughout its length.

In the Arboretum Nursery the new Arboretum Pit has been extended, taking the place of the old line of sunk frames, and makes a very useful house for growing on young stock plants for the Temperate House.

Temperate House.—A gravel path has been made in the centre of the grass avenue leading from the west doors of the

Temperate House to the Holly Walk. This connects with a new direct service path to the stable yard and arboretum nursery, with the object of preventing the formation of footpaths across the grass, and has proved satisfactory.

Pyrus campanulata flowered freely in the spring in the Temperate House and from one of the fruits a young seedling has been raised.

Tropical Department.—Palm House. The iron construction under the gratings has been renewed in the north-east end. In the central dome many panes of tinted glass have been removed and replaced with clear glass, while on the upper parts of the roof the black deposit, which has encrusted the glass for years, has been removed by scrubbing with pumice. These operations have resulted in a considerable addition of light to the house, a benefit which is especially of value during the winter.

T Range.—The hot-water pipes in the Nepenthes House have been rearranged and a new underground storage tank for rain-water has been constructed outside the Insectivorous House.

Sherman Hoyt House.—A new entrance doorway has been constructed between this House and House 7 and a sliding door has been fitted in place of the swing door leading into the latter.

Thanks to the generosity of private donors a long, low teak house for South African Succulents has been constructed parallel to the Sherman Hoyt House with which it communicates at the western end. The building was finished at the end of last year and internally the benches are built up with Triassic (new red) sandstone quarried near Liverpool which closely resembles the Karoo sandstone. All the succulents will be planted out amongst sandstone, and the work will be completed early in the spring.

In the southern bay of House 2 the wall shave been covered with slabs of peat, fixed to the walls with non-corrosive metal rods. Ferns have been planted on them and spores have germinated naturally. The pillars supporting the roof have also been covered with peat on which ferns are now growing vigorously. These two improvements have considerably enhanced the effect of a tropical forest which it is intended to convey in this portion of the house. The interior and exterior of House 5 has been repaired and repainted. A collection of stapelias has been planted out on the stage on the west side of the house. They have made remarkably fine growth in the few months which have elapsed since they were planted out.

Among interesting plants the flowering of the Western Australian insectivorous plant *Byblis gigantea*, which was raised from seed, is deserving of record; also the fruiting of *Theobroma Cacao* var.

Forestero, and *Piper nigrum* in the Tropical Economic House. A number of plants of the interesting Australian filmy fern, *Loxsoma*, have been raised from spores brought over from New Zealand.

Owing to the damage caused by London fogs, electric fans have been temporarily installed in the Tropical Orchid Houses and the Begonia House, and have given satisfactory results ; experiments in connexion with London fog damage are still in progress.

Melon Yard.—In Houses 18A, B and C, the hot water pipes have been renewed and overhead heating installed, the staging being reconstructed where necessary.

Student Gardeners.—Although the movements of students were not so numerous as in 1934 the position may be regarded as satisfactory.

Outgoing Students.—Fourteen men completed their training and secured appointments as follows :—Home.—Parks Departments—eight ; Educational Authorities or Establishments—three ; nurseries or private gardens—one.

Overseas.—Sudan—one ; New Zealand—one.

One student proceeded to La Mortola, and another to Spain (Cap Roig). Both men will return to Kew to complete their training in due course.

Ill health caused the resignation of one student.

New Entrants.—Seventeen men, all British subjects, were appointed to full course vacancies and were recruited as follows :—Parks Departments—five ; nurseries or private gardens—nine ; Armstrong College, Newcastle-upon-Tyne—one ; Botanic Garden, Oxford—one, and Botanic Garden, Wellington, New Zealand—one.

In connexion with the exchange of students scheme, men were sent to and entered from Berlin Botanic Garden ; Sans Souci Garden, Potsdam ; Luxembourg Gardens, Paris, and the Ontario Agricultural College, Canada.

Volunteer students were admitted for varying periods as follows: Great Britain—two ; Canada—one ; Holland—two ; U.S.A.—two ; and Italy—one.

Rainfall Record.

Rainfall recorded at the Royal Botanic Gardens, Kew, during 1935 :

	Inches.		Inches.
January	.97	July	.98
February	2.18	August	1.93
March	.33	September	2.44
April	2.78	October	2.10
May	1.01	November	4.40
June	3.09	December	2.31

Total 24.52 inches.

The total for 1934 was 18.25 inches.

WATERFOWL.—Lady Byng of Vimy presented four common pintails (one duck and three drakes) and a number of carolina and mandarin eggs ; five of the former and three of the latter have hatched out. M. Jean Delacour gave one pair each of S. African shelldrake, Australian wild duck and Meller's duck. Three rosy-billed pochards (two ducks and one drake) and a pair of gadwall were presented by Sir Charles Langham.

The Stanley Crane " Joey," who had been a familiar figure in the Gardens for 20 years, came to an untimely end when attempting to cross the ice on the lake to one of the islands and, falling through, was frozen. The Director of the National Zoological Garden of South Africa, Pretoria, has kindly sent over a young male Stanley Crane to take his place.

CONTRIBUTIONS TO THE GARDENS, 1935.—During the year, 1097 separate consignments of living plants, bulbs, seeds, etc., were received, a slight increase as compared with the figure (1073) for 1934. The following is a summary of the items of most interest :—

Public Institutions :—

Alger, Botanic Garden.—38 packets of seeds.

Alma-Ata, Botanic Garden, U.S.S.R.—20 packets of seeds.

Amani, East African Agricultural Research Station.—Suckers of *Musa* spp. ; plants of *Bignonia venusta* for re-despatch to Barbados.

Arnold Arboretum, U.S.A.—Seeds of *Zizania aquatica*, *Acer nikoense*, and *Fraxinus americana* var. *ascidiata*.

Berlin-Dahlem, Botanic Garden.—A collection of choice ferns, stove and greenhouse plants ; also a large collection of seeds—various.

Bermuda, Department of Agriculture.—Bulbs of *Lilium longiflorum* var. *eximium* ; also of Bermuda-grown Roman hyacinths.

Bombay, Municipal Gardens.—Plants of *Allamanda*, *Bougainvillea*, *Tacsonia*, *Achania* and *Selaginella* spp. ; also rhizomes of *Hedychium* spp.

British Museum (Natural History).—Seeds, collected in Tibet and Bhutan by Mr. F. Ludlow and Captain G. Sheriff, in Tropical Africa by Mr. G. Taylor, and in Tierra del Fuego by Mr. P. W. Reynolds ; bulbs, tubers and plants collected by Mr. Willoughby Lowe and Miss Waldron in the Gold Coast ; bulbs collected by Miss N. Lindsay in Persia.

Calcutta, Royal Botanic Garden.—Fruits of *Balanites Roxburghii* and seeds of *Amherstia nobilis*.

Cambridge, Botanic Garden.—Plants, including a collection of ferns and stove plants, and spp. of *Kalanchoë*, *Scutellaria Lehmannii*, *Hoodia Barrii* ; also various seeds.

Cambridge University Expedition to Nigeria.—Fruits of *Icacina* species.

Canberra, Commonwealth Forestry Bureau.—Seed of *Hibiscus insularis* from Norfolk Island.

Chelsea Physic Garden, London.—A collection of stove plants.

Copenhagen, University Botanic Garden.—A large collection of seeds, spores and tubers; cuttings of *Selaginella bellula*, seedlings of *Orontium aquaticum* and corms of *Crocus Pallasii*.

Cuba, Harvard University Botanical Garden, Cienfuegos.—Seeds including *Coffea zanguebariae*, *Psychotria undata*, and *Malpighia punicifolia*.

Darjeeling, Lloyd Botanic Gardens.—A large collection of seeds of Eastern Himalayan plants.

Edinburgh, Royal Botanic Garden.—Plants, including *Gentiana* spp., *Eriocaulon* spp., *Primula brevifolia*, *P. Sherriffae*, *Heliamphora nutans*, and *Pinguicula lusitanica*.

Fiji, Department of Agriculture, Suva.—Suckers of *Musa* spp.

Florida, Coconut Grove, U.S. Plant Introduction Garden.—Seed of *Coccothrinax Garberi*.

Glasgow, Botanic Garden.—Plants of *Calceolaria*, *Huernia*, *Ouvirandra*, *Todea* and *Hymenophyllum* spp.

Glasnevin, Botanic Garden.—Seeds and cuttings.

Gold Coast, Department of Agriculture, Accra.—Bulbs and seeds.

Gröningen, Botanic Garden.—Plants of *Lycopodium Hippuris*, *Drynaria quercifolia*, *Polypodium punctatum* var. *reino-cristata* and seeds—various.

Hobart, Botanical Garden.—A Wardian case of plants. Unfortunately several died during the voyage.

Hobart, Forestry Department.—A Wardian case of plants, all of which, however, were dead on arrival.

Hong Kong, Botanical and Forestry Department.—Several interesting consignments of seeds of trees and shrubs and fern spores.

Hyde Park, London.—Plants, including spp. of *Meconopsis*, *Nierembergia*, *Verbena*, *Campanula Bolusii*, *Semeiandra grandiflora*, *Coleus Forskohlii*; also a large number of bulbs of *Lilium Wallichianum*.

John Innes Horticultural Institution, Merton.—Plants, including *Conophytum*, *Argyroderma* and *Calceolaria* spp., bulbs of *Lachenalia* spp.

Innsbruck, Botanic Garden.—Plants of *Pinus sylvestris* and *Salix purpurea* bearing *Viscum album*.

Khartoum, Government Gardens.—A Wardian case of plants.

Kimberley, McGregor Memorial Museum.—Plants, bulbs and seeds.

Kirstenbosch, National Botanic Gardens.—Seeds, including a collection of *Erica* spp. and vars.; also *Jubaeopsis caffra* forwarded on behalf of Mr. H. C. Bellew, Pondoland.

Lahore, Forest Office, Punjab.—Seeds of *Iris Milesii*, *Strobilanthes atropurpureus* and *Ulmus* spp.

Leiden, Botanic Garden.—Plants of *Psilotum flaccidum, Costus mexicanus*, cuttings of *Nepuntia plena* and seeds—various.

Lisle, Morton Arboretum, U.S.A.—Cuttings of *Deutzia scabra* var. *Fortunei* and of four spp. of *Populus* ; also seeds—various.

Lourenço Marques, Agricultural Services, Portugese East Africa. —Plants of *Euphorbia* spp.

Lund, Botanic Garden.—Consignments of seeds.

Lu-Shan, Arboretum and Botanic Garden, China.—Several large consignments of seeds including new or rare species of trees and shrubs.

Lyon, Botanic Garden.—Seeds, including *Victoria regia* var. *Trickeri* and *Euryale ferox.*

Maymyo, Botanical Garden.—A collection of orchids and bulbs.

Montreal, University Botanical Institute.—Seeds of *Cirsium minganense*, a very rare and remarkable endemic species from the Gulf of St. Lawrence.

New York, Botanic Garden.—A collection of palms and cacti ; seeds of *Dendromecon rigida.*

New Zealand, Department of Agriculture, Wellington.—A consignment of banana suckers from Apia, Samoa. All were dead on arrival ; they appeared to have been chilled on the voyage.

Ottawa, Central Experimental Farm.—Seeds.

Oxford, Botanic Garden.—Plant of *Cadalvena spectabilis.*

Paris, Museum national d'histoire naturelle.—Collection of plants comprising species and varieties of *Blechnum, Platycerium, Euphorbia, Phalaenopsis*, etc.

Peradeniya, Royal Botanic Garden.—Two shipments of plants and several consignments of seeds.

Pietermaritzburg, Natal University College.—Seeds of *Jubaeopsis caffra*, forwarded by Mr. J. W. King, Umtata.

Pretoria, Division of Plant Industry.—Bulbs, seeds and fruits.

Singapore, Botanic Gardens.—Seeds of *Sonerila johorensis* and *Livistona Robinsoniana.*

St. Helena, Agricultural and Forestry Office.—Two cases of bulbs of *Lilium longiflorum* var. *eximium.*

Stellenbosch, University Botanic Garden.—Plants, including *Limosella Merenskyana* discovered in 1934, and *Pachypodium namaquanum.*

Trinidad, Imperial College of Tropical Agriculture.—Cacao pods.

Trinidad, Royal Botanic Gardens.—A collection of ferns and cacti ; cuttings of *Ananas sativus* var. *variegata* ; seeds of *Anemopaegma carrerensis.*

Uganda, Department of Agriculture.—A Wardian case of plants ; fruits of *Eugenia caryophyllata.*

Washington, U.S. Department of Agriculture.—Roots of *Saururus cernuus* ; plants of *Anemopsis californica* supplied by Dr. Carl Epling, Los Angeles.

Wisley, Royal Horticultural Society's Gardens.—Plants and cuttings, *i.e.*, alpines, tropical and temperate subjects, also a hybrid said to be *Pernettya mucronata* x *Gaultheria Shallon*.

Zanzibar, Department of Agriculture.—A Wardian case of Zanzibar clove seedlings.

Private Donors :—

Mrs. L. Amory, Tiverton.—A collection of species and varieties of *Pelargonium*.

Mrs. M. W. Bailey, Halesworth.—Plant of *Salix* species from Baffin Land.

Mr. E. K. Balls, Knebworth.—Consignments of plants, bulbs, corms and seeds from his 1935 expedition to Turkey. Mention must be made of some beautifully feathered forms of *Crocus cancellatus*.

Mr. T. T. Barnard, Wareham, Dorset.—Seedlings of *Cleanthe* and *Aristea* spp., also a large collection, made in South Africa, of seeds, corms and tubers.

Mr. J. C. Bennett, London.—Seeds of West N. American high alpines.

Mr. Charles Bock, Juan Fernandez.—Plants and spores of *Thyrsopteris elegans* and *Lomaria cycadifolia*, and plants of *Dicksonia Berteroana*. The addition of these most interesting plants, from Robinson Crusoe Island, to the Kew collection, is in no small measure due to the kind assistance of H.M. Consul General, Valparaiso, who supervised the arrival of the plants from the Island and cared for them pending despatch to England, the arrangements for which he also undertook.

Miss E. A. Britton, Tiverton.—Plants, bulbs and seeds.

Mr. J. R. Brown, Pasadena, California.—A collection of species and varieties of *Haworthia*, *Andromischus*, *Cheiridopsis*, etc.

Mr. E. G. Bryant, Prieska, South Africa.—Plants, bulbs and seeds.

Mr. P. J. Byrne, Cape Bedford, Cooktown, N. Queensland.—Seeds, including *Parinari Nonda*, *Pongamia glabra*, *Petalostigma quadriloculare*.

Mr. C. E. Carr, Port Moresby, Papua.—Seed of a species of (?)*Cassia* collected in the lower altitudes of the unknown interior behind the Gulf Division by Mr. J. G. Hides, the discoverer of Mount Jubilee.

Messrs. Charlesworth & Co., Ltd., Haywards Heath.—A collection of orchids.

Col. Stephenson R. Clarke, Haywards Heath.—Plants, including *Chirita Trailliana*, *Sarmienta repens* and *Lonicera arizonica*.

Mr. R. E. Coates, London.—74 packets of seeds collected in Persia.

Mrs. D. J. Collins, London.—Tubers and seeds from Siam.

Mrs. F. L. Corfield, London.—Corms of *Acidanthera bicolor* var. *Murielae* and plants of *Gladiolus* spp. from Abyssinia, collected by Mr. F. D. Corfield.

Dr. J. M. Cowan, Edinburgh.—Seeds from the Darjeeling district including *Schifflera elata* and *S. impressa.*

Mr. L. Denny, Strawberry Hill, Middlesex.—A large consignment of orchids and stove plants brought from India ; also plants and cuttings of *Crassula, Euphorbia* and *Cymbidium* species, etc., from his collection.

Professor K. Dinter, Bautzen, Germany.—A consignment of seeds collected in South West Africa.

Messrs. Duncan & Davies, Ltd., New Plymouth, New Zealand.—A large consignment of shrubs which, considering the length of the voyage, arrived in fair condition.

M. L. Dutrie, Meirelbeke, Belgium.—A collection of stove plants.

Mr. Clarence Elliott, Stevenage.—Plants of *Perezia* species.

Captain Esme Erskine, Gore, Western Abyssinia.—Several consignments, amongst which may be mentioned tubers of a forest *Begonia* and *Impatiens regia* ; seeds of *Milletia ferruginea, Stictocardia beraviensis* and *Cordia abyssinica.*

Mrs. H. A. Fowler, Winnipeg.—Seeds of *Gentiana* spp.

Mr. P. Ross Frames, Kenilworth, Nr. Cape Town.—Plants of *Lithops* and *Conophytum* spp. received through the Bolus Herbarium.

Mr. H. B. Garrett, Chiengmai, Siam.—Plants of *Pleione* and *Bulbophyllum* species.

Professor Dr. H. Glück, Heidelberg.—Plants of *Limosella subulata* forma *submersa* from Wales.

Mr. F. D. Golding, Ibadan, Nigeria.—Seeds of an aquatic plant (*Dopatrium longidens*) found at Jos, N. Nigeria.

Mr. J. Gossweiler, Luanda, Angola.—Seeds, including *Kalanchoë* sp. nov. and *Schefflera* sp.

Colonel C. H. Grey, Cranbrook.—Plants, including aquilegias from the Rockies, *Aristea* sp. etc.

Mr. N. G. Hadden, West Porlock.—Plants, including *Paeonia anomala* var. *Beresowskyi* and *Hydrocotyle dissecta.*

Mr. F. J. Hanbury, East Grinstead.—A collection of seedling orchids and a plant of *Renanthera coccinea.*

Miss Thistle Y. Harris, Sydney.—A collection of ferns ; also a large consignment of seeds and fern spores.

Mrs. M. V. A. Hewett, Bicester.—A miscellaneous collection of Burmese orchids.

Messrs. Hillier & Sons, Winchester.—Shrubs.

Mr. G. B. Hinton, Mexico.—Several consignments of seeds of interesting plants including *Sphinctospermum constrictum, Cassia Hintoni* (sp. nov.) an arborescent *Senecio,* and the crimson-flowered *Gentiana salpinx.*

M. Louis Van Houtte, Père, La Pinte lez Gand.—A collection of stove plants.

Mr. H. H. Hume, Gainesville, Florida.—Bulbs and seeds of *Zephyranthes* spp. and varieties.

Miss I. W. Hutchison, Haddington.—Seed and specimen of *Primula eximia* collected in Nome by Mr. Thornton.

Major L. Johnston, Hidcote, Glos.—Plants, bulbs and seeds from both Hidcote and Mentone.

M. Paul Kestner, Lausanne.—Plants of *Nephrodium Borbasi*, *Aspidium Braunii* and *Scolopendrium Hemionitis*, also spores of *Cheilanthes* and *Phegopteris* spp.

Knap Hill Nursery Ltd., Woking.—Shrubs, bulbs and seeds.

Mr. C. H. Lankester, Costa Rica.—Collections of orchids; also spp. of *Melocactus*, *Lycopodium*, *Marattia*, etc.

Messrs. Laxton, Bros., Bedford.—Plants (roses).

Dr. F. Lemperg, Hatzendorf.—Plants and seeds, principally alpine subjects.

Miss Nancy Lindsay, Abingdon.—A collection of shrubs, bulbs and seeds collected by her in Persia.

Mr. A. Lovejoy, Durban.—Plants of *Stapelia* spp.

Mr. W. J. Marchant, Stapehill, Wimborne.—Shrubs, including spp. of *Daphne*.

Mr. G. E. Martindale, London.—A collection of bulbs and seeds from Majorca.

Mrs. M. M. Michelmore, Chudleigh, South Devon.—Plant of ? *Bulbophyllum* sp., tuber of *Eulophia* sp. and seeds of *Haemanthus* sp., from Tanganyika, coll. by Mr. A. P. G. Michelmore.

Mr. F. W. Millard, East Grinstead.—Collections of alpines, including N. American species new to cultivation at Kew.

Sir William Milner, Appletreewick, Yorkshire.—Plant of *Adenocarpus Bacquei*, cuttings of *Fabiana imbricata* var. *coerulea*, etc.

Messrs. Mitsubishi Shoji Kaisha, Ltd., London.—A collection of bulbs of *Lilium* species.

Mocambo Cacao Estates, Brazil.—Pod of "Maranhao" Cacao, brought to Europe in the Graf Zeppelin by Mr. Ff. Bellairs.

Mr. R. Mountford, Nairobi.—Roots of *Canarina abyssinica* from the crater of Meningai, Kenya Colony.

Professor P. A. Munz, Claremont, California.—Seeds of *Oenothera macrosiphon* and *O. longissima*—two rare and rather remarkable species from inaccessible places in New Mexico and South Eastern Utah respectively.

Mr. J. C. Nauen, Coventry.—A collection of seeds and fern spores from Bermuda.

Mrs. Beatrix Nunn, Tarkwa, Gold Coast Colony.—Seeds of *Musa* sp. from a tree growing about 100 miles west of Tarkwa.

Mrs. Clarice Nye, Prospect, Oregon.—Several consignments of interesting seeds, including *Hesperochiron californicus*.

The Rt. Rev. R. S. More O'Farrall, The Lord Bishop in Madagascar.—Plants, a collection of rare species comprising the following:—*Decarya madagascariensis*, *Alluaudia procera*, *A. dumosa* (dead on arrival), *A. Humbertii*, *A. comosa* and *Didiera madagascariensis*.

Mr. L. Palmer, Forestal Land, Timber & Railways Co., Ltd., London.—Collections of seeds from Argentina.

Major Albert Pam, Broxbourne.—Bulbs and corms from Cyprus, rhizomes and seed of *Bomarea* spp., bulbs of *Pamianthe quitoensis*.

Messrs. Perry's Hardy Plant Farm, Enfield.—Plants and seeds.

Dr. K. von Poellnitz, Altenburg, Thüringen.—Plants and cuttings.

Sir John Ramsden, Bulstrode.—Plants, rhododendrons.

Miss M. Rathbone, Hayes, Kent.—Plants of damask roses, old-fashioned white pinks, and bulbs of *Galanthus* species.

Prof. E. Reuter, Helsingfors.—A collection of seeds.

The Lady Rockley, Lytchett Heath.—A collection of plants including spp. of *Hibiscus*, *Melaleuca*, *Callitris* and *Albizzia*., also *Stapelia Planti*.

Mr. C. Gilbert Rogers, Etchingham, Sussex.—Plants of *Lobelia Telekii* and *Kniphofia Snowdeni*.

Mr. Lionel de Rothschild, Exbury.—Plant of *Rhododendron* Lady Chamberlain ; tubers of *Nymphaea* " Jupiter."

Messrs. Herbert J. Rumsey & Sons, Ltd., Dundas, New South Wales.—A shipment of plants, most of which, unfortunately, did not survive the journey ; also seeds and fern spores.

Hon. Mrs. E. F. Ryder, Beaulieu.—Plants, a large number of spp., of *Haworthia*, also *Faucaria Jamesii*, from South Africa ; tubers of *Pelargonium* spp., seeds of *Bryomorphe Zeyheri* ; also a collection of seeds of succulents.

Mr. W. A. Schipp, British Honduras.—A Wardian case of plants, the shipment of which was arranged by the Agricultural Officer, British Honduras, and the Superintendent of Gardens, Hope, Kingston, Jamaica.

Colonel R. C. F. Schomberg.—A collection of seeds from the Karakoram received through Mr. David McLean, Brighton.

Mr. R. Seligman, Wimbledon Common.—Plant of *Wormskioldia longipedunculata* from Kreuger National Park, Transvaal.

Messrs. W. C. Slocock, Ltd., Woking.—Plants, including *Acanthopanax ricinifolius*.

Mr. J. T. Smith, St. Nicholas, Cardiff.—Plant of *Cotyledon Peacockii*, a rare species.

Mr. H. J. Solomon, Sydney.—Seeds, including *Owenia* spp. and varieties, *Anacampseros rufescens*, *Microloena stipoides*, and plants of *Echeveria Wardii*.

Herr L. Späth, Berlin.—A collection of trees and shrubs.

Mrs. F. N. Stagg, Sevenoaks.—Seeds, *Sabinea carinalis*, *Beaumontia grandiflora* and *Jatropha podagrica* from Antigua.

Major F. C. Stern, Goring-by-Sea.—Several consignments of plants, including collections of shrubs, alpines and irises, seeds and bulbs.

Mrs. C. W. Stewart, Worcester.—Seedlings of *Cardamine Impatiens* L. var. *poteriifolia* from the original plant named by Dr. G. C. Druce.

Messrs. Sutton & Sons, Ltd., Reading.—Plants, cuttings and seeds.

Mr. P. M. Synge, West Byfleet.—A collection of lobelias and helichrysums from Mts. Ruwenzori and Elgon.

Dr. A. Tischer, Siegburg, Germany.—Seeds and plants of species of *Lithops*, *Conophytum*, *Titanopsis* and *Fenestraria*, etc.

Mr. A. W. Trethewy, London.—Collections of seeds from Morocco.

Professor R. S. Troup, Oxford.—Seeds collected in East and South Africa.

Mrs. J. H. Vaughan, Zanzibar.—Pseudo-bulb of *Eulophidium zanzibaricum*, which has never previously been in cultivation.

Sir Oscar Warburg, Headley.—A collection of trees and shrubs; also seeds, from Roumania, of *Quercus* spp.

Captain G. F. Warre, Roquebrune, A. M., France.—Plants, including spp. and varieties of *Acacia* and *Nerium*; also a collection of roses.

Messrs. John Waterer, Sons & Crisp, Ltd., Twyford and Bagshot.—A collection of herbaceous plants; also a number of choice rhododendrons.

Mr. F. A. Weinthal, Roseville, N.S.W.—Orchids.

Mr. G. E. Wolstenholme, La Paz, Bolivia.—Seeds and fern spores.

Messrs. W. Wood & Son, Ltd., Taplow.—A collection of herbaceous plants.

Distribution of Plants and Seeds.—In connection with the annual distribution of seeds, 180 separate consignments were despatched during the early months of the year, comprising 5101 packets of herbaceous plants and 4934 packets of trees and shrubs. The aggregate shows an increase of 72 packets as compared with the figures for the previous year.

Species specially distributed were *Erythrina acanthocarpa*, from South Africa, *Theobroma Cacao*, from Trinidad, *Zizania aquatica*, from Massachusetts, varieties of Cow Peas (*Vigna unguiculata*) from Northern Nigeria, and *Quercus Mirbeckii*, *Aesculus californica* and *A. indica*, seeds of which were harvested at Kew.

Shipments of plants overseas—mainly in Wardian cases—were as follows: Agricultural Departments of Seychelles; Zanzibar (*Eugenia* spp.) and Nigeria (2 consignments). Botanic Garden, Hobart, Tasmania; East African Agricultural Research Station, Amani; Imperial College of Tropical Agriculture, Trinidad (Banana suckers, and seedling plants of *Theobroma Cacao* raised at Kew from seeds transported in the Graf Zeppelin from Brazil); Government Gardens, Khartoum; St. George's Park, Port Elizabeth, South Africa; National Zoological Garden, Pretoria; and Messrs. Duncan and Davies, New Plymouth, New Zealand. In addition a consignment of plants of *Bignonia venusta*, received from Amani, was reshipped to the Department of Agriculture, Barbados.

Other recipients of material included the following :—

Admiralty Compass Observatory, Slough.—Trees and shrubs.

Amani, East African Agricultural Research Station.—Suckers of musas.

Arnold Arboretum, U.S.A.—Seeds and grafts of trees and shrubs.

Berkeley, California, College of Agriculture.—Seeds of composites.

Berlin-Dahlem, Botanic Garden.—Grafts and cuttings of hardy trees and shrubs.

Bristol University.—A collection of plants and cuttings, including *Ixora* spp.

Calcutta, Royal Botanic Garden.—Seeds of *Begonia* spp.

Cambridge, Botanic Garden.—Plants, including *Kalanchoë* spp., *Lindbergia grandiflora* and *Jasminum rex.*

Chelsea Physic Garden, London.—Plants, including *Marsilia* spp. *Begonia* spp., and cycads.

Civil Service Sports Ground, Chiswick.—Shrubs and herbaceous plants.

Copenhagen, University Botanic Garden.—Plants of *Rhododendron* spp.

Cuba, Harvard University Botanical Garden, Cienfuegos.—Plants of *Aristolochia* spp.

Ealing, Parks Department.—A collection of stove plants.

Edinburgh, Royal Botanic Garden.—A collection of palms, nepenthes and herbaceous plants.

Fleetwood, Lancs., Parks Department.—A collection of trees and shrubs.

Glasgow, Botanic Garden.—Plant of *Eichhornia speciosa.*

Glasnevin, Botanic Garden.—Plants, seeds and cuttings ; also a collection of ferns.

The Hague Public Parks, Holland.—Grafts of hardy trees and shrubs.

Heidelberg University, Germany.—Plant of *Limosella Merenskyana.*

Hendon, Education Committee.—Aquatics.

Hornsey Public Parks, London.—Cuttings of hardy shrubs.

Hyde Park, London.—Plants, seeds and cuttings.

John Innes Horticultural Institution, Merton.—Plants, seeds and cuttings.

Ministry of Labour, Claims and Record Offices, Kew.—A large collection of hardy trees and shrubs.

Leicester, Museum and Art Gallery.—Plant of *Isoëtes malivernianum.*

Manchester, Parks Department.—A collection of succulents.

New York, Botanic Garden.—A collection of pelargoniums and begonias.

Oxford, Botanic Garden.—Tubers of *Nymphaea gigantea.*

Paris, Museum national d'histoire naturelle.—A collection of ferns.

Potsdam, Sans Souci Gardens, Germany.—Cuttings of *Aeschynanthus* and *Columnea* spp.

Pretoria, National Zoological Gardens, South Africa.—A collection of orchids, bulbs, etc.

Punjab and N.W. Frontier Province, Forestry Department.—Cuttings of Poplars.

Regents Park, London.—Alpines and plants of *Sutera grandiflora*.

Richmond, Surrey (Terrace Gardens).—A collection of *Iris*.

Soldiers, Sailors and Airmen's Families Association, Wimbledon.—Plants of *Ginkgo biloba* and flowering shrubs.

St. Helena, Agricultural & Forestry Office.—Plants, including *Pelargonium radula*.

Swansea, Parks Department.—A collection of greenhouse plants and seedlings of *Aesculus indica*.

Torquay, Parks Department.—A collection of herbaceous and alpine plants and seeds.

Trinidad, Imperial College of Tropical Agriculture.—Seeds, plants and suckers of musas.

Washington, United States Department of Agriculture.—Plants of *Arundinaria* and *Bambusa* spp.

Windsor, Royal Gardens.—Bougainvilleas.

Wisley, Royal Horticultural Society's Garden.—Alpines and herbaceous plants.

Private Recipients :—

Lord Aberconway, Bodnant.—A collection of Mexican oaks.

Mr. V. Alvarez, Managua, Nicaragua.—Plants of *Derris elliptica*.

Mr. E. Ashby, Blackwood, South Australia.—Cuttings of *Rhipsalis* spp.

Mr. G. P. Baker, Sevenoaks.—Plants of *Salix reticulata*, *Euonymus kewensis* and other shrubs.

Mr. P. K. Barr, Oxhey.—*Helleborus* spp.

Mr. L. S. Bartlett, Ascension Island.—Collections of seeds of trees, shrubs and herbaceous plants for experimental planting.

Lady Muriel Jex-Blake, Nairobi.—A collection of plants, including *Ceropegia* spp.

Mr. H. A. Brown, South Chingford.—Cuttings of *Fuchsia* spp.

Mr. J. R. Brown, Pasadena, California.—*Haworthia* spp.

Messrs. G. Bunyard & Co., Ltd., Maidstone.—*Rosa* spp.

Messrs. Cadbury Bros., Bournville.—Seedlings of *Theobroma Cacao*.

Prof. Dr. Mario Calvino, San Remo, Italy.—Plants of *Lonchocarpus Nicou* and *Derris elliptica*.

Messrs. Charlesworth & Co., Ltd., Haywards Heath.—A collection of orchids.

Miss D. A. Chaytor, Darlington.—Hardy shrubs and plants of *Lavandula* spp.

Col. Stephenson R. Clarke, Haywards Heath.—A collection of seedling Mexican oaks, and plants of *Salvia Greggii*, *Camellia maliflora*, etc.

Mr. S. Courtauld, Eltham.—Plants of *Liriope spicata* var. *angustifolia*.

Mr. G. A. Courthorpe, Chagford.—Alpines and rhododendrons.

Dartington Hall, Totnes.—Herbaceous plants and hardy trees and shrubs.

Mr. J. Davis, Belmore, New South Wales.—A collection of fern spores.

Donard Nursery Co., Newcastle, Co. Down.—Hardy trees and shrubs.

M. L. Dutrie, Meirelbeke, Belgium.—Plants and cuttings of stove plants.

Mr. A. Ezra, Cobham.—Collection of trees, shrubs and herbaceous plants.

Lady Game, Blandford.—Seedling primulas.

Commander F. Gilliland, Londonderry.—A collection of Mexican oaks.

Mr. R. S. Glover, Oakland, California.—A collection of seeds of *Rhododendron* spp.

Hon. Mrs. E. L. Grant, Leiston.—Plants, including *Brunfelsia calycina* and a collection of ferns.

Col. C. H. Grey, Cranbrook.—Plants of *Blandfordia marginata*, *Lysichitum americanum*, and alpines.

Mr. S. H. Griffin, Churt.—Succulents.

Mr. A. Grove, Kew.—Liliums.

Mr. N. G. Hadden, West Porlock.—Alpine and herbaceous plants.

Dr. F. H. Rodier Heath, Weymouth.—A collection of succulents.

Messrs. Hillier & Sons, Winchester.—Seeds, plants and grafts of hardy trees and shrubs.

M. Louis Van Houtte, Père, La Pinte lez Gand.—Plants, seeds and cuttings.

Messrs. G. Jackman & Son, Woking.—Cuttings of hardy trees and shrubs.

Mr. A. T. Johnson, Conway, N. Wales.—A collection of alpines.

Major L. Johnston, Mentone.—A collection of plants, and seedling Mexican oaks.

Knap Hill Nursery, Ltd., Woking.—Plants, seeds and cuttings of hardy trees and shrubs.

Mr. A. Krejei, Van Nuys, California.—A collection of ceropegias.

Sir Charles Langham, Fermanagh.—A collection of trees and shrubs.

Mr. C. H. Lankester, Costa Rica.—A collection of plants, including succulents.

Mr. H. Q. Levy, St. Anne's, Jamaica.—Dendrobiums.

Messrs. Stuart Low & Co., Enfield.—Grafts and cuttings of camellias.

Mr. R. H. Macaulay, Argyll.—Alpines and herbaceous plants.

Mr. W. J. Mackay, Durness, Sutherland.—A collection of rhododendrons.

Major Sir George Manners, Woodbridge.—A collection of plants, including *Jacaranda mimosifolia* and *Plumeria acutifolia.*

Mr. W. J. Marchant, Stapehill, Wimborne.—Plants and cuttings of hardy trees and shrubs.

Captain N. McEchearn, Pallanza, Italy.—A collection of seedling Mexican oaks.

Mr. F. W. Millard, East Grinstead.—Seeds and plants of alpines.

Sir F. W. Moore, Rathfarnham, Co. Dublin.—Hardy trees and shrubs.

Mr. H. Armytage Moore, Saintfield, Co. Down.—Hardy trees and shrubs.

Mr. G. W. Olive, Dauntsey's School, West Lavington.—Seeds of hardy herbaceous plants.

Major Albert Pam, Broxbourne.—Collection of plants.

Messrs. Perry's Hardy Plant Farm, Enfield.—Aquatics and seeds of *Victoria regia.*

Dr. K. von Poellnitz, Altenburg, Thüringen.—A collection of *Echeveria* spp.

The Marchioness of Reading, Walmer Castle.—A collection of shrubs and climbing plants.

Mr. Lionel de Rothschild, Exbury.—A collection of Mexican oaks ; plants including *Clivia kewensis,* and *Prunus campanulata.*

Messrs. B. Ruys, Ltd., Dedemsvaart, Holland.—Plants and seeds, including *Jasminum* spp.

Hon. Mrs. E. F. Ryder, Beaulieu.—Succulents, including *Stapelia* spp.

Messrs. Sanders, St. Albans.—A collection of orchids.

Mr. L. H. Saunders, Nigeria.—Plants, including *Strelitzia reginae, Pelargonium kewensis,* etc.

Mr. T. Sharp, Westbury.—Succulents.

Messrs. W. C. Slocock, Ltd., Woking.—Grafts and cuttings of hardy shrubs.

Major A. A. Dorrien-Smith, Tresco.—A collection of Mexican oaks.

Mr. O. H. Smith, Morvern, Argyll.—Bulbs of *Lilium* spp.

Herr L. Späth, Berlin.—Grafts of *Prunus subhirtella* var. *autumnalis.*

Lady Beatrix Stanley, Market Harborough.—Alpines and herbaceous plants.

Major F. C. Stern, Goring-by-Sea.—Plants, seeds, and a collection of mesembryanthemums.

Mr. J. B. Stevenson, Ascot.—Plant and grafts of *Rhododendron serotinum.*

Miss A. F. Strickland, Wimbledon.—A small collection of palms.

Sir Stephen Tallents, Dartford.—Cuttings of *Salix* spp.

Mr. K. Wada, Numazu-shi, Japan.—Seeds of *Rhododendron* spp.

Messrs. R. Wallace & Co., Ltd., Tunbridge Wells.—Grafts of *Rosa* spp., seeds of *Berberis* and *Cotoneaster* spp.

Sir Oscar Warburg, Headley.—A collection of seedling Mexican oaks, and plants of *Davidia Vilmoriniana*.

Captain G. F. Warre, Roquebrune, A.M., France.—A collection of plants, including camellias in variety.

Messrs. J. Waterer, Sons & Crisp, Ltd., Bagshot.—Plants and cuttings of hardy trees and shrubs.

Dr. J. Cromar Watt, Aberdeen.—Pelargoniums.

Mr. J. C. Williams, Caerhays.—A collection of Mexican oaks.

Mr. E. L. Winter, Bude.—A collection of bog plants.

Professor O. F. Wuyts, Gand-St. Pierre, Belgium.—Seeds and grafts of rhododendrons.

Bedgebury

The year has been an unsatisfactory one so far as tree growth is concerned. Following a mild winter young shoots were developing early in May on many species of conifers, particularly the Chinese abies and piceas, when, during the night of May 16th and early morning of May 17th, a severe frost occurred which not only killed every young shoot but also some of the previous year's wood. A full account of the effect of this frost will appear in K.B. 1936, no. 1.

The unusually severe check to the trees was very noticeable in the length of time taken by many of them to form new shoots from dormant buds. Some grew again within a few weeks, but many showed little movement before August. A few died and recovery in other cases is still doubtful. Owing to the very wet and mild autumn some trees—especially those that began growing in August—continued to grow until October, when, owing to the unripe condition of the wood, they were again injured by frost.

Green spruce aphis was prevalent in spring and autumn but was not troublesome in summer. Moist climatic conditions appear to favour its spread ; when a hot dry period occurs the pest practically disappears. *Dreyfusia nüsslinii* was prevalent on some of the firs—especially those that suffered most from frost injury. Pine-shoot moth caterpillars (*Retinia* spp.) were prevalent on many of the pines and a good deal of hand-picking of affected buds has been carried out. The removal of resin masses containing larvae is also receiving attention. The most serious fungus disease has again been *Armillaria mellea*. It has been responsible for the death of several well-grown young trees.

In some species height growth for the year has reached the average for the last few years, but many have only grown at about one third the normal rate, and some that were badly frozen are actually shorter than they were a year ago. The rainfall for the year was 41.03 inches. Four or more inches of rain fell during each of the following months, February 4.88 ; April 4.06 ; August 4.46 ; September 5.12 ; October 4.07 ; November 7.02.

Wind disturbed some of the young trees but there was no serious injury from that source. No trees were blown down by the violent storm that occurred in late September, but several oaks lost a number of limbs.

This being the tenth year from the time planting was commenced, the trees have been re-measured and it is now possible to judge which species are unlikely to succeed or will only do so when special conditions are created. Most of the semi-tender trees such as all species of *Callitris* and *Widdringtonia*, tender species of *Juniperus*, *Cupressus*, *Pinus*, *Abies*, *Tsuga*, *Podocarpus* and a few other genera have been killed by cold, but in a few instances one or two trees out of several of a doubtfully hardy species are still alive and growing reasonably well. That is so with two trees of *Pinus caribaea*. Thirteen plants 9 inches high were planted in 1926. All died but two and they are now 10 feet high and 8 feet 6 inches respectively. They are given some protection from cold winds in winter and spring by the erection of screens of branches. *Pinus patula* has on several occasions been reared to a height of 4 or 5 feet and has then been killed by cold. A plant of *Taiwania cryptomerioides* has stood with some winter protection since 1926, and although it does not increase much in height it is a well branched healthy bush. A number of young plants of *Pinus Montezumae* and *P. palustris* appear to be established after several previous trials. Two pot plants of the Mexican *Pinus Greggii* taken from the Temperate House at Kew in 1926, are now 18 feet and 13 feet high, and as they appear to be perfectly healthy it is hoped that they will now withstand the coldest period that is likely to occur.

There have been difficulties in finding the right place for certain plants and more moving about still remains to be done. Some of the golden-leaved yews made little progress as long as they were left on an open sunny bank, but appear to be growing better after removal to a lightly-shaded position. Of six plants of *Torreya nucifera* 6 inches high, planted from pots in 1926 under identical conditions, and within a few feet of each other, only one grew satisfactorily, the others became stunted and yellow. In 1930 the five poor plants, not more than 9 inches high, were moved to another position, two died, and the other three now measure 2 feet 5 inches, 2 feet 9 inches and 2 feet 11 inches, respectively, in height. The undisturbed plant is 5 feet 2 inches high. *Podocarpus andina* (*Prumnopitys elegans*) grew very badly where it was originally planted, but is growing much better in another place. *Picea Omorika* has made fair progress planted amongst the other spruces, but some plants of similar age planted in another place have grown very much better. We have not yet found the ideal place for *Ginkgo biloba* for although tried in several positions it is not growing freely. Some species have been found to succeed most satisfactorily after being kept in a nursery until they were 2 or 3 feet high, others, particularly some of the pines, have given the best results when grown singly

in pots and planted out before they were a year old. In a few cases pine seeds have been sown in prepared ground in order that there should be no root disturbance. *Pinus Pinea* was very difficult to establish from ordinary nursery plants. There has also been a good deal of trouble with *P. halepensis* but in that instance climatic conditions are at fault.

Possibly the most unsatisfactory genus as a whole is *Picea*. That may be due to frequent attacks by green spruce aphis which have necessitated the constant use of insecticides. The newer Chinese species of *Abies* and *Picea* are generally less satisfactory than the better known species. They are inclined to grow too early and on several occasions have had the young shoots killed. *Abies koreana* appears to be less liable to injury by spring frosts than other species.

Up to the present time, we have been unsuccessful with *Larix Griffithii* but a further trial should be made. *L. Potaninii* does not take kindly to Bedgebury conditions although several plants are in a fairly healthy state. *Larix decidua* (*europaea*), represented by several geographical forms, has grown very well, the tallest tree is 33 feet high and there are others varying from 27 to 32 feet. They were between 2 and 3 feet high when planted in 1925. *L. Kaempferi* (*leptolepis*), *L. eurolepis* and *L. laricina* (*americana*), have all grown well. *L. Gmelini* (*dahurica*) and varieties, and *L. occidentalis* are irregularly developed. *Cedrus atlantica* and *C. Deodara* have grown better than *C. Libani*, with one exception the latter trees are stunted. Several of the North American *Abies* have made good progress, especially *A. concolor*, *A. Lowiana*, *A. grandis*, *A. nobilis* and *A. magnifica*. The best tree of *A. Lowiana* is 28½ feet high and the best tree of *A. grandis* measures 21 feet. Some of the *Abies* have had soft leaders broken by birds. *A. Fraseri*, *A. balsamea* and *A. sibirica* are generally unsatisfactory.

The various species and varieties of *Chamaecyparis* and *Cupressus* are growing well, except when tender species have been injured by cold, and certain varieties have been attacked by *Armillaria mellea*. Thujas on the whole are thriving, the most unsatisfactory being some of the smaller varieties of *T. orientalis* which are not very healthy. Two or three trees have been killed by honey fungus. The best tree of *Cupressus arizonica* is 17 feet 6 inches high, *C. macrocarpa* is 20 feet, *C. macrocarpa* var. *lutea* 21½ feet, *C. Goveniana* 12½ feet, but there were many losses before these species could be established. *Chamaecyparis nootkatensis* is very vigorous, the largest tree planted in 1927 is now 16 feet high. Some of the varieties of *C. Lawsoniana* are from 12 to 18 feet high. The variety *Pottensii* has suffered severely from honey fungus, 5 plants out of 10 being killed after they had grown to a height of 5 feet. *Pinus nigra* and varieties, *P. Pinaster*, *P. leucodermis*, *P. Thunbergii*, *P. sylvestris*, *P. ponderosa*, *P. Coulteri*, *P. Banksiana* and others have grown well but we have lost a number of trees, 6 to 12 feet high, through honey fungus. Some of the species to suffer were *P. Coulteri*, *P. Sabiniana*, *P.*

Banksiana and *P. Cembra*, several five-leaved pines have also been killed by *Cronartium ribicolum*. The most satisfactory species of this group are *P. Armandii*, *P. Peuke*, *P. monticola*, *P. flexilis* and *P. parviflora*. *Pinus attenuata* (*tuberculata*) has grown well but is not in a satisfactory condition, the leaves have been yellow for a number of years and the general condition suggests unsatisfactory root action, although other pines nearby look perfectly healthy.

Cryptomerias, *Athrotaxis*, *Sciadopitys verticillata*, *Cunninghamia lanceolata*, *Fitzroya patagonica*, and others are growing well, and although numerous losses have occurred, the general condition of the trees in the Pinetum at the end of the first ten years is satisfactory.

The Museums

As usual the routine work of correspondence and attention to visitors has absorbed most of the time of the staff. A good deal of relabelling has been necessary, for, in addition to the usual change of labels every few years owing to discoloration, many name changes had to be made owing to the exigencies of the International Rules of Nomenclature.

Dr. F. N. Howes has carried out investigations upon vegetable waxes and Dr. R. Melville has got together information upon the 200 or more different kinds of woods that have been given the name of mahogany, with or without a descriptive prefix. The Keeper has compiled an account of the correspondence and official minutes concerning the National Pinetum at Bedgebury during its first 10 years. Numerous specimens have been collected and added to the Arboretum Herbarium.

Special exhibits have been made of woods known as mahogany, the various types of *Sorghum*, and of a series of acorns and acorn cups from numerous species of *Quercus*.

The interior of Museum 2 has been redecorated and a section of rough stone floor inside the east entrance has been replaced by a floor of cement. Much of the linoleum which had been in use for between 40 and 50 years has been replaced by new. The President of the Royal Academy very kindly inspected Miss North's oil paintings in the North Gallery to see whether any deterioration is taking place. The report was quite satisfactory, but rebacking and certain preservative measures were advised; these the Office of Works propose to undertake in the near future. The interior of the Studio attached to the North Gallery has been redecorated and electric light installed. Lights have also been placed over the case devoted to special exhibits in Museum 1.

Mr. J. Addens spent several weeks in the Museums' Library on work connected with the opium poppy, and Mr. A.

Grant undertook three months' research on East African timbers. Sir John Buchan-Hepburn, Bart., is spending the winter at work as an honorary assistant in the Arboretum Herbarium.

Duplicate Museum specimens have been distributed to Mr. E. W. Carls, Idaho, U.S.A. ; Miss M. Cunningham, Shepherds Bush ; Herr W. Hieber, Bayreuth ; Dr. F. Hockmann, Brussels ; Mr. E. Milton, Torquay Museum ; Dr. J. Muir, Riversdale, S. Africa ; Mr. S. T. Parkinson, South Eastern Agricultural College, Wye ; Professor S. L. Vella, University of Malta ; and Mr. J. Wiles, Richmond.

Presentations to Museums.—Mr. D. Baird, Drumoak ; plank of Douglas fir from Kennel Wood.

Lt.-Col. R. W. Barclay, Dorking ; branches of *Pinus attenuata* and cones.

Mr. W. G. Barnard, Lydenburg, Transvaal ; stem of *Vellozia equisetoides* and a brush made from it.

Dr. G. A. Buckmaster ; *Posidonia* balls from the Murray River, South Australia.

Mr. I. H. Burkill, Kew ; buttons and cigarette holder made from seeds of *Raphia* sp.

Messrs. Cadbury & Co., Ltd., Bournville ; specimens relating to cocoa manufacture.

Messrs. Chiswick Products, Ltd. ; waxes used in polish making.

Messrs. Chivers & Sons, Ltd., Histon ; bottled fruits.

Mr. T. D. A. Cockerill, Ashland, Oregon ; photographs of the Hooker oak, *Quercus lobata*.

Dr. H. E. Durham, Hereford ; photographs of mistletoe on various hosts.

Mr. R. A. Dyer, Division of Plant Industry, Pretoria ; samples of " Dagga," *Cannabis sativa*, as smoked by natives.

Captain Erskine, H.M. Consul, Gore, Abyssinia ; specimens of Abyssinian woods.

Director, Forest Products Research Laboratory, Princes Risborough ; timber specimens.

Messrs. J. Harris & Son, Swansea ; log of oak dug up during excavations.

Mr. N. B. Helmsing, Hull ; specimens of wood.

Mr. J. H. Holland, Ealing ; sections of fishing rods made from bamboo, and 48 lantern slides.

Dr. D. Hooper, London ; piece of wood grown through a flint, and a box made of burr wood.

Dr. F. N. Howes, Kew ; seeds of soy beans and other pulses.

Miss M. S. Johnston, Kew ; silver medal of Horticultural Society, London, presented to Mr. E. Johnston in 1836.

Director of Agriculture, Kenya ; sample of *Artemisia brevifolia* grown at Molo.

Lt.-Col. W. B. Lane, London ; oak manna from Kurdistan and a sweetmeat made from it in Baghdad.

Mr. J. N. D. La Touche, Craven Arms ; *Acacia Catechu* wood found while excavating for a dock at Bombay.

Dr. J. Muir, Riversdale, South Africa ; drift seeds from the Riversdale coast.

Miss E. R. Napier, Nairobi, Kenya ; geocarpic fruit of *Cucumis humofructus*.

The Palma General Fibre Co., Ltd., London ; sample of Palma fibre from Mexico.

Dr. Robertson, London ; walking stick of bog oak.

Mr. A. J. Sadler, New Malden ; Malayan seeds.

Dr. H. G. Schweickerdt, Kew ; fruits and seeds of *Monsonia umbellata*.

Mr. L. G. Shadbold, Managing Director, Star Brush Co., London ; exhibit showing stages in manufacture of nail brushes from Ixtli fibre.

Director, Botanic Gardens, Singapore ; 12 specimens of timbers.

Mr. C. G. Trapnell, N. Rhodesia ; resins from a number of African trees.

Miss S. Vincent, Ross Is., South Andaman Islands ; seeds of the talipot palm.

Mr. S. F. H. Wemyss, Colombo, Ceylon ; brick tea from Hongkong prepared for the Russian market.

Sir W. Wright-Smith, Royal Botanic Gardens, Edinburgh ; section of wood of *Paulownia tomentosa* (*P. imperialis*).

Jodrell Laboratory

There has been an increase in the number and scope of the enquiries dealt with at the laboratory this year. As usual, most of the routine work has consisted in identifying timbers, fibres, barks and other miscellaneous botanical material by a study of its anatomy. Owing to the steady growth of the collection of permanent microscopical slides it has been possible to carry out many of these identifications far more expeditiously than was possible in the past.

Some of the more unusual items included the following : roots stated to have been blocking up drain pipes in one instance were found to be elm and in another willow : a " water chestnut " from China was identified as a corm of *Eleocharis tuberosa* Schultes : material vomited by a poisoned dog proved to be the remains of some hazel nuts : and " powder " from the wallpaper in a damp room consisted of fungus spores. A number of samples of kapok, whose buoyancy was stated to be unsatisfactory, were found to contain an admixture of cotton or other fibres, and in some instances no kapok at all. At the request of the British Museum laboratory the fibres used in the manufacture of the paper on which some alleged 6th century Chinese pictures had been painted were examined. This helped to establish that the pictures in question were not genuine.

Physiological enquiries concerning the effect of ultra-violet light on plants, the ascent of sap in trees, respiration, photosynthesis and damage to greenhouse plants after fumigation have also been dealt with.

One of the most interesting special investigations has been concerned with measures to prevent greenhouse plants from being damaged by toxic substances present in the atmosphere during foggy weather. This work, which is still in progress, is being carried out in co-operation with the gardens staff, and much valuable assistance has also been afforded on the chemical side by members of the staff of the Government Laboratory, and other chemists and physiologists interested in the subject. The investigation on the morphology of the single cotyledon of *Ranunculus Ficaria*, mentioned in last year's report, has been completed and an account has been published in the "Annals of Botany." The mode of fertilization, the causes of the frequent sterility and the production of bulbils in the leaf axils of *R. Ficaria* are still under investigation.

The number of visitors working at the laboratory has been considerably greater than in any recent year, and some of them are still engaged in prolonged investigations. The work of Mr. J. Pryde, who is making a study of the anatomy of, and identifying the chemical substances present in a number of different kinds of wood from South Africa, is especially worthy of note. Other visitors included the following: Mr. R. A. Blakelock (rhizomes), Mr. L. A. Boodle (identification of botanical remains excavated from the Egyptian tombs), Mr. Booth (fixing material for cytological purposes), Mr. I. H. Burkill (*Tamus*, etc.), Miss W. M. Curtis (morphology and anatomy of *Taraxacum*), Mr. A. D. Grant (wood structure), Mr. A. F. Mir (general elementary studies), Mr. S. Ramanjam (cytology), Mr. D. P. Watson (structure and germination of leguminous seeds).

The Herbarium

Europe, North Africa, and the Orient.

The year 1935, compared with the previous year, saw a considerable increase in the number of specimens received for incorporation in this department of the Herbarium. 24,886 numbers (sometimes a single number needing 2 or 3 sheets in mounting) have been presented or purchased. This figure includes 10,714 numbers received for identification or verification, but does not include single specimens or small parcels sent for determination by correspondents. 12,225 sheets have been mounted, additional to about 8,000 of the sheets from the Fraser herbarium which were already mounted on sheets of the Kew size. Approximately 16,000 sheets have been laid in.

These figures indicate a marked lag in mounting, which was due mainly to mounters being detailed for other work than mounting for the department.

During the year the staff has concentrated on the identification of new material and a large proportion of the collections sent in by correspondents has been determined. The genera *Doronicum*, *Pimpinella*, *Carum*, *Nonnea*, and *Arnebia* have been rearranged.

Considerable additions to the British collections have been made by members of the Herbarium staff, and include plants from Dorset, Surrey, Norfolk, Devon, Wiltshire, Gloucestershire, Suffolk, Hampshire, Somerset, and Ireland. Miscellaneous British collections were received from Messrs. J. E. Lousley, G. E. Martindale, H. S. Redgrove, and H. N. Ridley, Mrs. C. I. Sandwith, Messrs. A. C. Trott, T. G. Tutin, E. C. Wallace, and J. W. Wyatt, and the Botanical Society and Exchange Club of the British Isles, and valuable collections from Ireland were received from Messrs. J. R. Sealy, B. L. Burt and Miss Ross-Craig. Material from Scotland was presented by Mr. C. E. Elton and Mrs. M. L. Wedgwood. A valuable collection from Jersey was sent by Mr. R. L. Proudlock.

The most important single addition to the British collections was the fine herbarium of the late Mr. J. Fraser, which was presented, shortly after his death and at his written request, by his relatives. An account of Mr. Fraser's botanical activities and of his botanical collections was published in the *Kew Bulletin*, 1935, 97.

Important collections of plants (totalling over 2,000 numbers) from the Balkan Peninsula have been received during 1935. These include Greece (Mr. S. C. Atchley) ; Albania (Mrs. R. V. Pennington); Dalmatia (Mr. B. Gilliat-Smith) ; S. Macedonia and Thrace (Mr. E. K. Balls, Prof. R. M. Dawkins, Mrs. F. S. Loch, Mr. H. G. Tedd) ; N. Macedonia (Rev. and Mrs. H. P. Thompson) ; and Bulgaria and the Dobruja (Dr. T. Wisniewski). Mr. A. K. Jackson, Mr. H. Montford and Dr. W. B. Turrill with a party of other botanists visited western Yugoslavia and the Karst in the spring. Their floristic and ecological studies included the preparation of 420 numbers of herbarium specimens, and many bulbs and packets of seeds, all of which were presented to Kew. Messrs. A. H. G. Alston and N. Y. Sandwith again explored parts of Albania and have presented to Kew a fine collection of 510 herbarium numbers and 120 packets of seeds. In addition the following specimens were purchased: Albanian plants from Dr. K. H. Rechinger and Plantae balcanicae (montenegrinae) exsiccatae from Dr. J. Rohlena.

Valuable collections from the Iberian Peninsula have been received from Mr. S. C. Atchley, Dr. J. Cuatrecasas, Dr. W. B. Gourlay, and Mr. and Mrs. P. W. Scarlett, and Flora iberica selecta, cent. 1 was purchased from Dr. P. Font Quer. Mr. G. E. Martindale presented a useful set of specimens from the Balearic Islands.

Central and Northern European plants have been contributed in considerable numbers by Dr. R. W. Butcher (Germany), Lt.-Col.

H. Cottingham (Switzerland), Miss M. E. Edmonds (Austria), and Mr. W. T. Stearn (Germany, France). Fine series of specimens of critical Scandinavian species of *Rosa* and *Salix* have been presented by the Stockholm Museum. The following collections have been received in exchange : Czechoslovakia, Flora Exsiccata Reipublicae Bohemicae Slovenicae, cent. 10, from the Masaryk University, Brno ; Estonia, Eesti Taimed, fas. 2, with summary, from Tartu University ; Finland, Plantae Finlandiae Exsiccatae, cent. 11, 12, and 13. Dr. W. Beijerinck of Holland exchanged a valuable consignment of 59 varieties of *Calluna vulgaris*. A complete set of the varieties cultivated at Kew of this species was prepared for the Herbarium, with duplicates for Dr. Beijerinck, and a collection of 50 numbers, in duplicate, of wild variations was also made.

Dr. F. Lemperg and Dr. R. Seligman presented sets of Italian plants and Lt.-Col. C. H. Grey sheets of bulbous plants from Italy.

Mr. E. K. Balls continued his explorations in Asia Minor, the dried specimens being purchased by Kew. Other collections from the Orient included Iran (Mrs. V. Dickson, Mr. A. C. Trott) ; Arabia (Mrs. V. Dickson) ; Caucasus (Dr. P. L. Giuseppi) ; Afghanistan (Major W. R. Hay) ; Palestine (Miss S. Pares, Tel Aviv Indep. Biol. Lab., and the Department of Agriculture, Jerusalem). The Department of Agriculture, Cyprus, continued to send collections made by Mr. A. Syngrassides. A total of 462 specimens was received from Cyprus during the year.

Mr. A. W. Trethewy most kindly presented 409 sheets of plants collected by him in Morocco—a valuable addition to the somewhat meagre North African collections at Kew. Dr. René Maire presented a number of sheets of species of *Lavandula* from Morocco and Algeria. A set of 50 rare and endemic Moroccan plants was purchased from M. J. Gattefossé and some specimens (mainly from Tripoli and Sicily) were received from the Imperial Forestry Institute, Oxford.

The Royal Horticultural Society presented the type material of Botanical Magazine plates, and a valuable set, made by the late Dr. O. Stapf, of 170 sheets of the genus *Aconitum* (mostly European) was presented by Mrs. Stapf.

Miss D. A. Chaytor gave her services for a considerable part of the year. She assisted in the general routine work and has completed her revision of the genus *Lavandula*. A paper on the taxonomy of *Lavandula* (excluding cultivated varieties and hybrids) has been prepared for publication.

Mr. M. Hassib, of the Egyptian University, Cairo, spent six months at Kew, completing his research on the cultivated *Cucurbitaceae* of Egypt.

Mr. R. A. Blakelock has commenced as a voluntary assistant and research worker. He is helping in general herbarium routine and is also investigating the structure and ontogeny of British rhizomatous *Labiatae*.

Miss W. M. Curtis is carrying out research on the anatomy and development of British *Taraxaca*, utilizing the material being grown in the Herbarium Experimental Ground.

Publications.—The Genus Clypeola and its intraspecific variation (K.B. 1935, 1).

On the Flora of the Nearer East : XVI (K.B. 1935, 54).

Fraxinus Pallisae and its Relationships (K.B. 1935, 132).

Alyssum campestre L. (Journ. Bot. 1935, 261).

Senecio Cineraria and its Distribution (Gard. Chron. 16 Nov. 1935, 352).

Epilobium adenocaulon Hausskn. in Britain (Journ. Bot. 1935, 177).

Asia.

China, Japan and Northern Asia.—A number of important collections have been received during 1935, among which the following may be mentioned : 1400 specimens from Hainan collected on the 2nd and 3rd New York Botanical Garden Expeditions to that island, and another collection nearly as large from the Lingnan University. When it is possible to have these, and an equally large collection received after the close of 1935, mounted and laid in, the flora of this interesting area will be well represented in the Herbarium. Until recently the representation of the Hainan flora was meagre, except for the plants of Dr. Augustine Henry's collecting. A large collection from Shantung was received from the Arnold Arboretum, and 363 plants from the Loochoo Islands and Formosa were purchased from the collector, Mr. J. Linsley Gressitt. Some 260 specimens, obtained by the late Mr. George Forrest's native collectors, were received from the Royal Botanic Garden, Edinburgh, at the request of Lord Aberconway. Miss M. Whiting presented more than three hundred specimens from south China (Kwangtung) and Japan, and three further fascicles of Flora Asiae Mediae have been received from Taschkent. Dr. G. E. C. Herklots has sent an interesting collection of Hongkong Orchids, including several new records or rediscoveries of old species.

It has not been possible to proceed with the mounting of this material, but 2100 specimens from the stores were mounted during the first half of the year. The material of the genus *Meconopsis* has been arranged in the Herbarium by Dr. G. Taylor's monograph. Numerous type specimens have been sent on loan to monographers, particularly the genus *Begonia* to Prof. Irmscher, and the genus *Astragalus* to Prof. Handel-Mazzetti. As in former years many critical cultivated plants have been identified, the new species and varieties having been described. Towards the end of the year it was possible to resume work on a Revision of the Chinese species of *Gentiana* and this work will shortly be ready for publication.

Publication.—Aconitum Nagarum Stapf and A. venatorium Diels (Kew Bull. 1935, 579).

Indo-Malaya.—The mounting and laying in of the accumulated arrears of Malay Archipelago and Philippine specimens continued, but owing to the large consignments received during the year there is no appreciable diminution in the quantity remaining to be dealt with.

The preparation of the final part of the " Flora of the Presidency of Madras " for various reasons took longer than expected. It was completed, however, before the close of the year and the proofs in part corrected. It consists mainly of the index for the whole work, but also contains an appendix of about 70 species, mostly described since the publication of the several parts.

The determination of the plants collected by the 1933 Mount Everest Expedition was completed early in the year. Two new species were described.

Dr. E. Barnes continued his botanical explorations of secluded areas in S. India and contributed a number of excellently prepared specimens as well as specimens in spirit and valuable notes. Four new species of *Arisaema* are included in his discoveries and these will be described and figured in " Hooker's Icones Plantarum " and in the Kew Bulletin in the near future.

Mr. T. D. R. Bell, C.I.E., late of the Indian Forest Service, presented 1500 specimens collected by himself and the late L. J. Sedgwick, I.C.S., in the Bombay Presidency. They have not yet been examined in detail but will form a valuable addition to the herbarium.

Another collection from the same region of about half the number was received through Lt.-Col. H. Cottingham, being the residue of the herbarium of the late W. A. Talbot, also of the Forest Service in Bombay.

Mr. H. A. C. Gill, I.C.S., sent a small collection made by him in Spiti in the Punjab hills. Although it contained no novelties, it is welcome as coming from an area little known botanically.

At the close of the year Mr. A. S. Vernay forwarded 132 specimens collected during his journey through Sikkim into Western Tibet. A preliminary examination has shown that the specimens have been well selected and prepared and will prove of very great interest.

A considerable number of duplicates were contributed by the Singapore Botanical Gardens, the Forest Research Institute of the Federated Malay States and the Buitenzorg Botanical Gardens (through Dr. H. J. Lam, Director of the Rijks Herbarium, Leiden).

Over 1000 specimens were consigned by the Forestry Department, British North Borneo and 100 by the Bureau of Science, Manila.

The naming of the collection made by the Oxford University Expedition to Sarawak in 1932 is now proceeding concurrently with

the identification of the large and valuable consignments received from the Forestry Department of British North Borneo. The bulk of the *Thalamiflorae* has now been dealt with, and a considerable quantity of duplicate material will have been distributed before this report is published.

Chaplain and Mrs. J. Clemens presented 149 specimens collected by them on Mount Kinabalu in British North Borneo and a further 2600 specimens were purchased.

Further collections from Siam were received from Mrs. D. J. Collins and Mr. H. B. Garrett.

The following smaller contributions were also made :

India.—Punjab, by Mr. R. N. Parker ; Kashmir, by Mr. P. N. Kohli ; Assam, by Mrs. Lorrain-Foxall, Revd. W. J. L. Wenger, and the Botanical Forest Officer ; Burma, by the Maymyo Botanical Gardens (Orchids) ; Madras, by Mr. P. V. Mayaranathan (through the Madras Museum) ; various sources by the Imperial Forest Botanist, Dehra Dun.

Ceylon.—By the Director of Agriculture and the Ceylon Tea Institute (in connection with an enquiry concerning Artemisias).

Philippine Islands.—By Miss M. M. Whiting.

Publications.—Studies in the Ericales : I. New and less-known species of Agapetes (K.B. 1935, 24). II. A new genus of Vaccinioïdeae from Borneo (K.B. 1935, 150).

The Flora of Madras : VIII.—Notes on the Flora of Madras : Part X. (K.B. 1935, 143).

New or little-known plants from S. India : V & VI (K.B. 1935, 92 and 157).

Some changes in plant names, by I. H. Burkill (K.B. 1935, 316).

Plants new to Assam : VII (K.B. 1935, 319).

Contributions to the Flora of Siam : XXXIX (K.B. 1935, 326).

Contributions to the Flora of Burma : XII (K.B. 1935, 572).

Africa.

An important event in this department was the completion of the " Flora of West Tropical Africa," the first part of which was published in March, 1927. The elaboration of the *Orchidaceae* and *Gramineae* took somewhat longer time than had been anticipated, but it was possible to despatch the first batch of MS. to the printers in the middle of August, and by the time this report is published the last Part will have appeared.* It contains the Monocotyledons, a Vegetation Map, and Index. It is anticipated also that

* Published on Feb. 20th. 1936.

the " Appendix," dealing with the economic plants of the area, will be available in a few months' time.

The staff have been mainly engaged in naming and laying in current material, and in the rearrangement of the herbarium, which is constantly required to facilitate the naming of new collections. A certain amount of revision has also been accomplished.

Revision work on *Acanthaceae*, *Leguminosae*, *Asclepiadaceae*, *Labiatae*, etc., has been continued, and the South African species of the genus *Cineraria* have been investigated and rearranged with a view to publication. Now that the " Flora of West Tropical Africa " has been completed, Dr. J. Hutchinson has commenced to work out the results of his visits to South Africa and Rhodesia in 1928-30, and as far as possible is comparing his material with type specimens, which should render more valuable the two sets left behind in South Africa, namely at Pretoria and at the Bolus Herbarium.

West Tropical Africa.—The number of specimens for determination from this area dropped considerably. From Portuguese Guinea, a little-known area, a number of Monocotyledons were received from the Jardim Colonial, Lisbon ; the Department of Agriculture, Sierra Leone presented over 100 specimens from the Gold Coast ; Dr. F. R. Irvine contributed over 300 specimens and Mr. C. Vigne contributed roughly 150, whilst a number of specimens were received from Mr. D. Gillett ; from Nigeria Messrs. J. D. Kennedy, R. Caterall, and G. C. R. Gray, and the Forestry Department contributed over 250 specimens. General collections were received from the Botanical Museum, Copenhagen (Coll. D. O. Hagerup), and from the Imperial Forestry Institute, Oxford.

Cameroons and Congo.—About 200 specimens were received in exchange from the Brussels Botanic Garden, and Mr. H. B. Johnston sent over 100 specimens for determination.

North Tropical Africa.—Mr. W. B. K. Shaw sent a number of specimens collected by him on a further expedition to the Libyan Desert, which add several species to the list published in K.B. 1934, 284. Messrs. F. W. Andrews, E. E. Evans Pritchard and R. C. Maxwell Darling contributed over 200 specimens from the Sudan. From Goré, Western Abyssinia, Capt. E. N. Erskine sent a number of small specimens of the local flora ; these sufficed to show that a trained collector might make a rich contribution to botanical science from this area, since Capt. Erskine's collection contains an attractive species of *Impatiens* and a new *Begonia*. Major H. V. Godding sent a number of specimens from Somaliland. A short time was spent on the determination of the large consignments of Somaliland plants in hand—mainly the collection of the Ethiopian Boundary Commission—and this work should be completed early in 1936.

East Tropical Africa.—Good collections from this area are particularly welcome, in view of the projected preparation of the Flora of East Tropical Africa, as the acquisition by Kew of all such specimens will ensure their inclusion in the Flora. The following specimens have been received from this area during the year :—Uganda : from Mrs. D. R. Tweedie nearly 200 specimens collected on the south-western slopes of Mt. Elgon ; from the Forestry Department roughly 300 specimens, and about half this number from Mr. W. J. Eggeling (collected during a private expedition) ; from the Agricultural Department over 350 specimens, and a number of specimens from Mr. H. B. Johnston.

Kenya : from the Forestry and the Agricultural Departments nearly 200 specimens ; from Coryndon Memorial Museum nearly 450 specimens ; a number of specimens were also received from the Scott Agricultural Laboratories, and the Kenya Veterinary Research Laboratories.

Tanganyika : The most useful collection received was that made by Miss E. M. Bruce, B.Sc., who spent several months at Morogoro investigating the flora of the Uluguru Mountain. The result was a valuable collection of over 1000 specimens which has added many species, some of them new, to the herbarium. This collection is ample proof of the necessity for preliminary training at Kew for field work, of which Miss Bruce had wisely availed herself before going out. Her donation, and the set of 950 duplicates of Herr Schlieben's collection received in exchange from the Brussels herbarium, have therefore enriched our collections in time for inclusion in the proposed Flora of East Tropical Africa. In connection with Mr. P. R. O. Bally's work on medicinal plants, his collection was critically determined after preliminary examination by Mr. P. J. Greenway at Amani, and Mr. Bally has presented some specimens and photographs. The E. African Agricultural Research Station, Amani, has continued to forward specimens by various collectors, over 1000 being received for confirmation and determination. On his return from leave Mr. B. D. Burtt sent over 150 specimens on behalf of the Tsetse Research Station. Mr. A. H. Ritchie communicated a number of host plants of coffee-pests, the Department of Agriculture nearly 200 specimens, Mrs. Culwick about 60 specimens, Mr. J. H. Vaughan 30 specimens of Orchidaceae from Zanzibar and nearly 300 were received from Mr. A. P. G. Michelmore.

South Tropical Africa.—Over 1700 specimens have been received from Mr. H. Boyd Gilliland, about 400 from Mr. C. G. Trapnell, an equal number from Mr. F. Eyles, and about 200 from Mr. J. Gordon Read, whilst about 400 have been received from the Imperial Forestry Institute, Oxford, some of these being from Nyasaland. Our knowledge of the flora of the last mentioned country has not increased very much for many years, and good collections are much desired.

Mascarene Islands.—Nothing has been received during the year under review.

Publications.—The following papers were published during the year :—

Observations on the Genus Commiphora and its Distribution in Tanganyika Territory, by B. D. Burtt (K.B. 1935, 101).

African Orchids : VII (K.B. 1935, 195).

New Trees and Shrubs from Tropical Africa : IV, by A. C. Hoyle and H. Dunkley (K.B. 1935, 255).

Tropical African Plants : XIII (K.B. 1935, 271).

Notes on the Genus Royena Linn. (K.B. 1935, 286).

Material of Marquesia acuminata from Northern Rhodesia, by H. Bancroft (K.B. 1935, 559).

Coleus barbatus Benth. (K.B. 1935, 322, 590).

Hooker's Icones Plantarum, tt. 3265-3272, 3287-3293 (1935).

South Africa.

During the year the South African species of *Ximenia* and *Avenastrum* were examined by, and a collection of plants (700) from the Northern Transvaal was determined by Dr. H. G. Schweickerdt, the Botanist seconded by the Division of Plant Industry, Pretoria, for duty at Kew. His papers on *Ximenia* and on the Northern Transvaal collection are now ready for publication. Work was continued by Dr. Schweickerdt on South African *Gramineae* and on Schoenfelder and Bradfield's plants from South-West Africa. About 600 of these latter specimens were critically examined and named by him.

About 1300 specimens were received from the National Herbarium, Pretoria, mostly for verification. Of these, 400 specimens were gathered in South-West Africa by K. Dinter, E. Schoenfelder and R. Bradfield. The Natal Herbarium contributed a valuable collection of 1300 sheets gathered by the late H. J. Thode, one of the classical collectors of Natal. The Bolus Herbarium, Kirstenbosch, contributed about 150 specimens, mostly from the Cape Province. An extraordinary fine series of 500 Cape plants was donated by Paymaster-Captain T. M. Salter, R.N. ; and Dr. H. G. Fourcade also contributed a number of excellent sheets of Cape plants. Numerous miscellaneous South African specimens were received from the Imperial Forestry Institute, Oxford, and several specimens were received for naming from the McGregor Museum, Kimberley, from Mrs. H. A. Milford (collected in Basutoland), who also presented nearly 100 photographs, and from the Transvaal Museum, Pretoria About 250 specimens were purchased from Mr. E. G. Bryant, Prieska Division.

Publications.—Notes on the Flora of Southern Africa : VI (K.B. 1935, 204).

A Revision of the Characters of Neodregea, by S. Garside (K.B. 1935, 292).

New and Noteworthy South African Plants : VII, by J. Burtt Davy (K.B. 1935, 568).

America.

During the year roughly 8800 sheets were mounted and 4,600 sheets were incorporated in the Herbarium. Special attention has, as in previous years, been paid to the flora of British Guiana. A final consignment of undetermined sheets in the Jenman Herbarium was received from Georgetown early in the year, and has been dealt with. A small collection made by the Forest Department of the Colony has been identified, and also a set of the plants recently collected by the American botanist Dr. W. A. Archer and kindly presented by the Department of Agriculture. The latter collection was made mainly in the North-west District and consists largely of second-growth species. Mr. Tutin has nearly completed the identification of the collection made by him on the Cambridge University Expedition in 1933, carrying out the work mainly at Kew. An investigation of the British Guiana species of *Tovomita* has been undertaken, and an account will be published during 1936.

Throughout the year the staff has been occupied with the study of Mr. G. B. Hinton's remarkable collections from Central Mexico, and descriptions of new species have been prepared for the Kew Bulletin and for Hooker's Icones Plantarum. The scientific value of these collections is very high, since Mr. Hinton is willing to collect the same species again and again in all stages and degrees of development and variation.

Of other collections named during the year the most important is that of Mr. H. F. Comber, made on the Argentine Andes and in adjacent Chile in 1925-27. This had been put aside, after the identification of selected numbers, for some years, but has now been thoroughly studied and will be incorporated as soon as possible. It is hoped that several of the outstanding new species will be described in the near future. Miss D. B. Stafford's second Peruvian collection was named and incorporated, and a small collection from Baffin Land, made by the Rev. H. A. Turner, was also identified.

Among valuable collections in the store which have been incorporated during the year are those of Prof. M. E. Peck from British Honduras, and those of Mr. M. T. Dawe which were made in Colombia during the Great War. An interesting accession was the presentation of 1750 sheets, mainly of Tropical American plants, by the Jenman Herbarium, Georgetown. These sheets had been distributed as duplicates from Kew many years ago, but in view of

modern developments in phytogeography about half of them cannot now be treated as duplicates, and their return is therefore very welcome. Many hundreds of these sheets are specimens from the famous Glaziou collections in Brazil. A considerable amount of time was necessarily spent in checking the material in order to ascertain which specimens were required for the Herbarium.

The following collections were also received :—

North America.—*Presented* : Canada, by Dr. D. Hooper on behalf of the Wellcome Historical Medical Museum (plants collected about 1825 on Sir W. S. Parry's 3rd voyage to the Arctic Regions) ; Mr. C. W. Thornton (Alaskan plants) ; Revd. & Mrs. H. A. Turner (Baffin Land plants) ; Miss M. Whiting (plants of Ontario, Quebec and British Columbia) ; United States, by the University of California, Berkeley (Californian plants) ; University of Florida Agricultural Experimental Station (numerous specimens of *Zephyranthes*); Mr. W. H. Pearsall (specimens of *Potamogeton* from the Herbarium of Walter Deane) ; Academy of Natural Sciences of Philadelphia (*Scrophulariaceae* of Eastern N. America) ; Dr. F. A. Rodway, Nowra, New South Wales (Californian plants coll. L. S. Rose) ; United States National Museum, Washington (plants of Arizona) ; United States and Canada, by the Dudley Herbarium, Stanford University (*Erythronium* of United States and British Columbia) ; Gray Herbarium (Plantae Exsiccatae Grayanae, Century V, and plants of Ontario and Michigan) ; Dr. S. F. Blake (plants of United States and Central America). *Purchased* : Mr. W. J. Eyerdam (plants of S. W. Alaska) ; Dr. F. W. Went (plants of Alaska and British Columbia).

Central America.—*Presented* : By Botanical Museum, Harvard University (Orchids of Honduras and Panama) ; Mr. C L. Lundell (British Honduras plants) ; University of Michigan (plants of British Honduras, Guatemala and Mexico) ; Señor J. Gonzalez Ortega (Mexican plants). *Purchased* : Mr. C. L. Lundell (plants of British Honduras and Guatemala).

East Tropical South America.—*Presented* : By the British Guiana Forest Department (British Guiana plants) ; Instituto de Biologia Vegetal, Rio de Janeiro (Amazonian plants, coll. Dr. A. Ducke) ; Mr. J. G. Myers (British Guiana plants) ; Instituto de São Paulo (Brazilian *Verbenaceae*) ; Botanical Museum, Utrecht (Surinam plants). *Purchased* : New York Botanical Garden (Brazilian plants, coll. B. A. Krukoff).

West Tropical South America.—*Presented* : By Madrid Botanic Gardens (Colombian plants, coll. Dr. J. Cuatrecasas) ; Miss D. B. Stafford (Peruvian plants). *Purchased* : United States National Museum, Washington (Peruvian plants, coll. G. Klug).

Temperate South America.—*Presented* : By Museo de Ciencias Naturales, Buenos Aires (Argentine *Verbenaceae*) ; Dr. A. Burkart (Argentine plants) ; Señor Cabrera (Argentine plants) ; United States National Museum, Washington (plants of S. America).

Publications.—Contributions to the Flora of Tropical America : XXIII and XXIV :—Notable Additions to the Flora of British Guiana (K.B. 1935, 117).

Review of the species of Byrsonima occurring in British Guiana (K.B. 1935, 311).

Australia and New Zealand.

Dr. W. E. Blackall has been working for several months on his very rich Western Australian collections and has kindly presented about a hundred specimens including portions of type specimens of species described by W. V. Fitzgerald, C. A. Gardner and others, as well as interesting gatherings of older species. These will fill many gaps in our collections. Dr. F. A. Rodway continued to send plants from New South Wales and we now have a fine collection from the southern part of that State. The specimens of *Juncus* have been especially investigated with interesting results. Other plants received included type specimens of species from Queensland and South Australia sent by Mr. C. T. White, Botanic Museum and Herbarium, Brisbane, and Dr. J. M. Black respectively. The naming of miscellaneous critical specimens and the answering of queries constituted the chief work carried out on Australian plants.

As the result of the voluntary assistance given by Miss M. D. Ker, it has been possible to prepare and send out a first instalment of duplicates from Mr. C. E. Hubbard's large Queensland collections.

Two valuable collections of New Zealand plants were received, one presented by the New York Botanical Garden (coll. A. W. Anderson) and the other by Miss L. M. Cranwell. The latter contained specimens from rarely visited islands and from mainland regions whose flora was poorly represented in the collections. Some specimens were also received from Dr. H. H. Allan. There has been no opportunity for work on New Zealand plants except routine determinations and replying to correspondence.

New Guinea and Oceania.

Mr. J. H. L. Waterhouse has continued to send specimens from the Mandated Territory, while the first instalments (amounting to roughly 1800 specimens) of plants obtained by Mr. C. E. Carr during a collecting trip into the interior of Papua have been received. These were presented by the Bentham-Moxon Trustees who contri-

buted towards the cost of Mr. Carr's expedition. The New York Botanical Garden presented a set of the *Ficus* specimens, collected during the Archbold Expedition, for critical determination.

The determination of plants collected by Mr. J. H. L. Waterhouse in the Solomon Islands (chiefly Bougainville I.) has been continued and a number of new species have been described. In this work Kew is keeping in close touch with Mr. C. T. White of Brisbane, who is having determined the large collections made in the same region by Messrs. L. J. Brass and S. F. Kajewski on behalf of the Arnold Arboretum. The species of *Ficus* of these latter collections have been received at Kew for determination.

Dr. A. C. Smith of the New York Botanical Garden spent several months at Kew working on his Fiji collections and during the same time the *Ficus* collected by him and others have been worked out and several new species discovered. These will be included in Dr. Smith's general account. A general account of the Figs of Fiji is being prepared. Further instalments of Fiji plants have also been presented by Mrs. H. B. R. Parham and Dr. A. Meebold.

Other collections received are Hawaiian plants purchased from Mr. O. Degener, and a large number presented in exchange by the Bernice P. Bishop Museum, Honolulu, who have also sent a fine collection of Samoan plants collected by Dr. E. Christophersen. The Field Museum, Chicago, presented a number of Hawaiian specimens collected by Mr. O. Degener, and Miss M. Whiting some specimens collected by her in Honolulu.

Among the numerous specimens received for identification have been some interesting plants collected in Tahiti, Raiatea and Rarotonga and sent by Capt. J. D. McComish.

Publication.—Melanesian Plants : I (K.B. 1935, 298).

Gramineae.

During the year under review 8148 sheets of grasses have been incorporated in the herbarium. This number represents only a portion of the accumulation of material mounted in 1932-1934 and includes comparatively few of those mounted in 1935. About 2000 specimens were named during the past year, the larger number of which came from tropical Africa ; on the other hand several thousand specimens from Australia, Siam, Mexico and Africa still await determination.

Large collections of grasses continue to be received from all parts of the world and have included a number of rare or new species. Those from Africa have been very numerous, especially from East Tropical and South Africa. Amongst other collections received, special mention may be made of the following : 70 specimens of *Saccharum* × *Sorghum* hybrids from Coimbatore Imperial

Sugarcane Station ; about 30 specimens of new species of Japanese Bamboos from Dr. Nakai, Tokyo Botanic Gardens ; over 50 Chinese grasses from Dr. Y. L. Keng, National Research Institute, Nanking, including co-types of several new species ; further collections of Queensland grasses from Mr. C. T. White, Botanic Museum and Herbarium, Brisbane and an exceptionally fine collection of about 350 sheets of Queensland *Paniceae* from Mr. S. T. Blake, Brisbane ; also a number of specimens of wild and cultivated species of *Oryza* and *Sorghum* from the Department of Agriculture, Northern Nigeria, the Royal Botanic Gardens, Calcutta, Dr. O. Posthumus, and Dr. A. F. G. Kerr.

The preparation of the " Flora of Tropical Africa " has been continued, but on account of unforeseen difficulties encountered in the *Agrosteae* and increased routine work, part 1 of Vol. 10 has not yet been completed. For the " Flora of West Tropical Africa," a key to the genera of *Gramineae* and an account of the genus *Eragrostis* have been prepared. The study of Australian grasses has proceeded slowly and revisions of the Australian species of *Iseilema, Echinopogon, Zoisia* and *Heterachne* have been published in "Hooker's Icones Plantarum," together with a description of a new genus *Sclerandrium* and a key to the genera of the *Polliniastrae*.

A classification of the cultivated species of *Sorghum* by Mr. J. D. Snowden has appeared in the " Kew Bulletin " (K.B. 1935, 221). A comprehensive account by him of this important cereal will shortly be published. Mr. Snowden has also given valuable assistance in general routine work. Mr. W. R. Philipson, with the aid of a grant from the Department of Scientific and Industrial Research, has completed his study of the British species of *Agrostis*. During the autumn months the following botanists from other countries examined grasses in the herbarium : Dr. A. Eig, who kindly determined a large number of specimens in the genus *Aegilops* ; the late Professor A. S. Hitchcock and Professor L. R. Parodi were engaged for some weeks in studying the types of American grasses in the herbarium and both revised determinations wherever possible ; Dr. F. A. McClure spent several weeks in examining specimens of *Bambuseae* for his revision of the Chinese Bamboos, and Mr. R. N. Parker studied types and other specimens of Indian grasses in connection with his elaboration of the *Gramineae* for the Flora of the Upper Gangetic Plain.

Publications.—A Classification of the Cultivated Sorghums, by J. D. Snowden (K.B. 1935, 221).

Notes on African Grasses, XVIII (K.B. 1935, 306).

A Grass with Spiral Phyllotaxis—Micraira subulifolia, by W. R. Philipson (K.B. 1935, 324).

Hooker's Icones Plantarum, tt. 3261-64, 3280, 3283-3286.

Abnormal Spikelets in the Genus Agrostis Linn., by W. R. Philipson (Journ. Bot. 1935, 65).

The Development and Morphology of the Ligule in Grasses, by W. R. Philipson (New Phytol. 1935, 310).

The Development of the Spikelet in Agrostis canina L., by W. R. Philipson (New Phytol. 1935, 421).

Pteridophyta.

About 1100 sheets were incorporated during the year, while there still remain many hundreds more awaiting incorporation. These are sorted into genera and arranged in separate cabinets.

Two large new collections were received : (1) 800 sheets of Haiti ferns collected by E. L. Ekman and purchased from Dr. G. Samuelsson ; (2) 630 specimens of Jamaica ferns collected and presented by Lt.-Col. H. W. Russell. Several smaller collections were also presented, among which may be mentioned a set of specimens collected by Miss M. Steele in the Mishmi Hills, Assam. Mr. G. B. Hinton continues to send excellent material of Mexican ferns among his general collections.

Work on the fern flora of West Africa was continued somewhat intermittently. It was found impossible to finish the investigations in time for them to be included in the fourth part of the " Flora of West Tropical Africa " as had been originally intended. During the latter part of the year work was commenced on the preparation of a new " Handlist of Ferns and Fern Allies cultivated in the Royal Botanic Gardens, Kew."

Musci, Hepaticae and Charophyta.

On account of the pressure of more important work it has only been possible to mount and incorporate a limited number of collections in the stores. An important set of Polish mosses issued under the title " Bryotheca Polonica " has been received from the Academy of Sciences, Krakow, and Dr. F. Verdoorn's " Hepaticae Selectae et Criticae " Series 8 and " Musci Selecti et Critici " Series 2 have been purchased. Collections of mosses and hepatics have been received for identification from Australia, India, Fiji, Brazil and elsewhere.

Mr. G. O. Allen has kindly continued to co-operate in work on the *Charophyta*, and has presented two interesting collections from India and Great Britain respectively, the former including a number of species previously unrepresented in the Herbarium.

Thallophyta.

Algae and Lichens.—Collections of algae added to the Herbarium during the past year included over 120 marine species from the Canary Islands, presented by Dr. F. Børgesen, in which are a

number of species first described in his " Marine Algae from the Canary Islands " : a small set of fresh-water algae from S. Paulo, Brazil, collected by Dr. A. Löfgren and enumerated by O. Borge in Arkiv f. Bot. 1918, also presented by Dr. F. Børgesen : an interesting collection of marine algae from Mauritius, preserved in formalin, presented by Prof. T. A. Stephenson : a small set of marine algae from the West Indies, presented by Miss M. Glegg : some calcareous algae from South Africa presented by Dr. J. Muir ; and also some British marine algae of historic interest among which are specimens collected by Miss Isabella Gifford, presented by Mr. F. Ballard. Professor W. A. Setchell of the University of California, who visited Kew in September, examined all the material of *Gigartina* and *Iridaea*, annotating many sheets.

The cutting-up, remounting and laying in of the " Phycotheca Boreali-Americana " has been continued and now more than half the volumes have been dealt with.

As in previous years a number of lichens from the general herbarium and from the Leighton collection have been loaned to lichenologists, especially in connection with the new edition of Rabenhorst's " Kryptogamen Flora." An exceptionally good collection of lichens of about 100 specimens from the second Regnell expedition to Brazil, determined by Dr. S. Malme, was presented by the Natural History Museum, Stockholm.

Fungi.—The most important acquisition during the year was the mycological herbarium of the late Rev. P. G. M. Rhodes, which was bequeathed by him to Kew. This consists of approximately 5000 specimens, almost entirely microfungi, and contains, in addition to Father Rhodes' own British collections, numerous specimens sent to him in exchange by correspondents abroad. Early in the year some temporary assistance was avilable and with this help a large part of the collection has been incorporated.

Other important donations of named fungi were the following :— Australia : 32 specimens, including types of new species, of Sooty Moulds, etc., from Miss L. Fraser, University of Sydney. Canada : 56 specimens presented by the Central Experimental Farm, Canadian Department of Agriculture. Europe : 21 specimens from Prof. G. Samuelsson, Stockholm. Great Britain : 45 specimens, chiefly Pyrenomycetes, from Dr. J. Ehrlich. 50 specimens of Uredineae from Mr. E. A. Ellis. U.S.A. : 115 specimens of Californian fungi, presented by the University of California. Iowa Basidiomycetes, from the University of Iowa. 21 specimens of Septobasidium, including types, from Dr. J. Couch.

Fungi have been received for determination from Kenya (Mr. C. A. Thorold), Natal (Division of Plant Industry, Pretoria), U.S.A (*Thelephoraceae*—Miss E. Morse), India (Mr. S. R. Bose) Tropical and South Africa (Dr. O. A. Höeg) and Australia (Dr. Ethel I. McLennan). The autumn fungus season in Britain was exceptionally

good, and, owing to the mild weather, was of long duration, so that work on the determination of fleshy fungi has been more than usually heavy. The work occasioned by varied queries from many sources, and requests for the examination of types has also been very considerable.

In preparation for the Sixth International Botanical Congress some considerable time was spent on nomenclature problems in the fungi.

Repair work on the herbarium sheets has necessarily been held up owing to the pressure of other work, but it is hoped to make progress with this during the winter months.

Visitors who have worked in the mycological department during the year include Dr. J. Ehrlich, who was preparing a monograph on the British species of *Nectria*, Professor A. H. R. Buller, Prof. N. J. G. Smith, Miss E. L. Stephens, Miss E. Fisher, Mr. T. Petch, Mr. W. B. Grove, and Mrs. E. T. Moldenke.

Experimental and Transplant Work.

Genetical research was continued at the Potterne Biological Station and at Kew on *Silene*, *Centaurea*, and *Saxifraga*. Scoring was commenced of F2 families derived from extra-British stocks of *Silene* and much of the future work will involve wild material from many European countries. Families (within *S. maritima* and *S. vulgaris*) from over 20 different countries have already been raised. Mr. E. M. Marsden Jones, Honorary Associate of the Royal Botanic Gardens, is continuing research at Potterne on *Anagallis* (with Prof. Weiss), on *Solanum Dulcamara*, and on *Epilobium*. Investigation of the microspecies of *Taraxacum* is continuing at Kew and preliminary experiments with *Clypeola* have been completed.

The Transplant Experiments of the British Ecological Society at Potterne have completed the eighth year of their existence. A third report has been published and the fourth biennial report is in progress of preparation.

Publications.—Third Report on the Transplant Experiments of the British Ecological Society at Potterne (Journ. Ecol. **23,** 443 : 1935).

Further Experiments on sex in Ranunculus acris (Journ. Genetics **31,** 363 : 1935).

Researches on Silene maritima and S. vulgaris : XIV and XV (K.B. 1935, 209).

The Investigation of Plant Species (Proc. Linn. Soc. London, 1934-35, 104).

The Genetics of Anagallis arvensis L. and A. foemina Mill. (l.c. 105).

About 3500 sheets have been added to these collections during the year. These include: (1) additional material illustrating the ecological survey of Richmond Park; (2) further specimens connected with breeding work in *Silene, Centaurea, Taraxacum,* and other genera; (3) sets of specimens illustrating variation in *Calluna vulgaris* and *Solanum Dulcamara.*

Summary.

The routine work, apart from naming, accomplished during 1935 is summarised as follows:—

Mounted	53,225	(approx.)
Incorporated	46,575	(approx.)
Duplicates distributed	10,332	
Specimens received on loan	10,189	
Specimens sent on loan	6,798	
Specimens presented or purchased ...	75,896	

Illustrations and Portraits.

The new studio and dark-room, Jodrell Laboratory, have been in use this year and the increased space and convenience are proving a great boon. A good deal of work had unavoidably been held up during the construction of the building but has now been dealt with, and work in the department is now much more up to date.

An enlarger has been purchased, but full advantage of the new facilities will only be appreciable when the equipment is more extensive.

A number of type specimens borrowed from other Herbaria have been photographed for the Kew collection, and about 500 herbarium specimens, living specimens and drawings, have been photographed for other Institutions. Drawings in colour and in black and white have been made for various publications.

Miss M. W. Tanner of London has again worked at the studio on botanical drawings, and Miss S. Atteck, from the Department of Agriculture, Trinidad, studied botanical drawing for several months at the Herbarium and also at the studio.

Drawings and photographs received during the year and incorporated in the Collection included:—52 water-colour drawings prepared for the Botanical Magazine and presented by the Royal Horticultural Society; 76 original drawings for a Supplement to Elwes' Monograph of the Genus Lilium, presented by Miss Snelling, and 40 plates of the Flowering Plants of South Africa by Dr. Pole Evans. The Bentham-Moxon Trustees continued their presentation

of copies of Hooker's Icones Plantarum, and numerous photographs and pictures were received from the collections of the late Dr. N. E. Brown and Mr. J. Fraser. Dr. A. A. Pulle presented 35 plates from Dr. H. J. Lam's work on the Sapotaceae ; plates of Dioscorea, to appear in the Annals of the Royal Botanic Garden, Calcutta, were received from Mr. I. H. Burkill, and two photographs of the rare orchid, *Cephalanthera rubra*, showing it growing in its only British county, from Mr. W. R. Price. Numerous drawings from other sources were also incorporated in the collection.

Nearly 200 photographs of type-specimens received from the New York Botanic Garden were laid into the Herbarium, placed in envelopes mounted on Herbarium sheets.

Mr. H. N. Ridley has presented portraits of Sir Joseph Banks and F. von Mueller, and a very fine portrait of Dr. J. Forbes Royle was presented by Miss Forbes Royle. Other portraits added to the collection during 1935 include those of Thomas Cooper, John Fraser and A. B. Jackson.

Nomenclature.

The Nomenclature work during the year was greatly increased by preparations for the Sixth International Botanical Congress. From the Royal Botanic Gardens, Kew, fifteen separate proposals dealing with additions and amendments to the International Rules of Botanical Nomenclature were submitted by members of the staff.

An important paper dealing with the conservation of later generic homonyms by Professor A. Rehder (Arnold Arboretum), Mr. C. A. Weatherby (Gray Herbarium), Dr. R. Mansfeld (Berlin), and Miss M. L. Green (Kew), was published, and laid before the Amsterdam Congress. The preparation of this paper was necessary owing to the alteration made in the homonym rule at the Cambridge Congress whereby all later homonyms are rejected. The conservation of a large number of later generic homonyms will save much nomenclatural change. The paper has been submitted to the appropriate Nomenclature Committee appointed at Amsterdam.

In his capacity as Rapporteur général Dr. T. A. Sprague issued his " Synopsis of Proposals " (see below). In this work all the proposals received by him were set forth in order. In all cases the new proposal is preceded by the text of the corresponding rule in the " International Rules of Botanical Nomenclature, ed. 3." Two copies of the Synopsis were sent to each of the members of the Executive Committee and certain other botanists, fourteen in all, in order to obtain their comments and votes on all the proposals contained in the Synopsis. The replies received were incorporated in " Preliminary Opinions concerning Nomenclature Proposals," also issued by Dr. Sprague.

As " Secretary for English " Miss M. L. Green prepared a full report of the Nomenclature Proceedings in that language at Amsterdam, and this, together with the German and French reports, formed the basis of the Report, prepared by Dr. Sprague as Secretary of the Executive Committee of Nomenclature, published in the Proceedings of the Congress.

The number of enquiries from botanists and others concerning nomenclatural difficulties has been, as usual, very large, and in order to reply adequately to many of them, much technical research is needed.

A new edition of the " Handlist of Coniferae grown in the Royal Botanic Gardens, Kew " is being prepared, and all the names contained in it are being investigated.

Publications.—Additions and Amendments to the International Rules of Botanical Nomenclature (K.B. 1935, 65-92).

Some changes in Plant Names (K.B. 1935, 316-319).

Conservation of later generic homonyms (K.B. 1935, 341-544).

The Gender of Generic Names: A vindication of Art. 72 (2) (K.B. 1935, 545-557).

The valid publication of the combination Lilium Duchartrei var. Farreri (K.B. 1935, 578-579).

Synopsis of Proposals concerning Nomenclature submitted to the Sixth International Botanical Congress, Amsterdam, 1935 (8vo., 80 pages).

Preliminary opinions concerning Nomenclature Proposals submitted to the Sixth International Botanical Congress, Amsterdam, 1935 (8vo., 28 pages).

Nomenclature at the Sixth International Botanical Congress, Amsterdam, September 2-7 (1935) (Gard. Chron. ser. 3. **98**, 425-427: 1935).

Index Kewensis.

The compilation of Supplement IX has gone on steadily throughout the year, the number of entries in the card catalogue amounting at the present time to about 29,000. The cards are arranged alphabetically, and are available for consultation by members of the staff and visiting botanists.

A large number of names omitted from the original Index and the Supplements has been included in the current supplement, such as those extracted from the seven volumes of Colla, Herbarium Pedemontanum (1833-1837).

The compilers have been engaged chiefly on extracting names from periodicals, but a good commencement has also been made on the independent works published during the quinquennium. It is worthy of mention also that during this same period a large number of *new* periodicals containing new names has appeared. There has also been a considerable increase in the amount of Russian literature received.

The number of signatures in the Visitors' Book for the year 1935 was 5605.

The following gave voluntary assistance :—Miss M. M. Whiting again assisted in arranging and classifying the Indo-Malayan material and Miss D. A. Chaytor and Mr. R. A. Blakelock gave similar assistance in the European section ; Miss M. D. Ker continued the work she undertook last year of labelling collections of Australian plants ; Mrs. E. Milne-Redhead gave further help in preparing drawings in connection with articles appearing in the Kew Bulletin ; Mr. J. D. Snowden assisted in the work on the Gramineae and Miss M. Gossling helped in sorting and laying in specimens in the Mycological Department.

Amongst frequent or regular visitors were members of the staffs of the Department of Botany, British Museum, the Imperial Mycological Institute, and the Imperial Forestry Institute, Oxford. The Staff employed by the Royal Horticultural Society in connection with the preparation of the Index Londinensis and the Botanical Magazine have worked in the Herbarium and Library throughout the year.

The most noteworthy or frequent visitors to the Herbarium were the following :—

Mr. A. H. G. Alston ; Dr. E. K. Janaki Ammal (Calcutta) ; Major G. Aylmer (Sudan).

Mr. E. G. Baker ; Miss E. M. Barnes ; Miss E. C. Barnett (Aberdeen) ; Mr. W. F. Bean ; Dr. W. Bircher (Switzerland) ; Dr. W. E. Blackall (Cottesloe, W. Australia) ; Mrs. L. Bolus (Kirstenbosch, S. Africa) ; Mr. L. A. Boodle ; Miss E. M. Bruce ; Miss E. Brubaker (Philadelphia) ; Mr. I. H. Burkill ; Prof. A. H. R. Buller (Winnipeg) ; Dr. E. J. Butler.

Mr. K. St. G. Cartwright ; Miss M. E. S. Chandler ; Miss D. A. Chaytor ; Mr. S. Clay ; Prof. R. H. Compton (Kirstenbosch, S. Africa) ; Dr. Erling Christopherson (Oslo) ; Miss L. M. Cranwell (New Zealand) ; Madame H. Czeczott (Cracow) .

Dr. J. M. Dalziel ; Mr. J. E. Dandy ; Mr. H. N. Dixon ; Mr. H. Dunkley.

Miss Alice Eastwood (San Francisco, California) ; Dr. J. Ehrlich (late of New York) ; Dr. A. Eig (Jerusalem) ; Mr. A. W. Exell.

Dr. H. R. Fletcher.

Miss M. Gossling ; Dr. W. Balfour Gourlay ; Mr. A. D. Grant (Aberdeen) ; Mr. P. J. Greenway (Amani, Tanganyika Territory) ; Col. C. H. Grey ; Mr. W. B. Grove.

Mr. M. Hassib (Cairo) ; the late Dr. A. S. Hitchcock (Washington) ; Mr. J. H. Holland ; Dr. D. Hooper ; Mr. J. T. Howell (San Francisco, California) ; Mr. A. C. Hoyle.

Miss J. B. Imlay ; Dr. F. R. Irvine (Accra, Gold Coast).

Mr. A. Bruce Jackson ; Dr. W. L. Jepson (Berkeley, California).

Miss M. C. Karsten (Terborg, Holland) ; Miss M. D. Ker ; Dr. A. F. G. Kerr.

Mr. J. E. Lousley.

Dr. F. A. McClure (Lingnan University, Canton) ; Miss H. N. McKay (Johannesburg) ; Dr. I. Manton ; Mr. E. W. Mason ; Dr. A. Meebold (Munich) ; Mrs. E. Milne-Redhead ; Dr. H. N. Moldenke (New York) ; Mrs. Ellys T. Moldenke (New York) ; Mr. H. N. Montford ; Mr. B. O. Mulligan ; Dr. John Muir (Riversdale, S. Africa).

Miss E. R. Napier (Nairobi, Kenya Colony) ; Dr. R. Nordhagen (Bergen) ; Mr. C. Norman.

Mr. R. N. Parker (Lahore) ; Dr. Lorenzo R. Parodi (Buenos Aires) ; Mr. T. Petch ; Mr. W. R. Philipson ; Mr. W. R. Price ; Mr. H. W. Pugsley.

Prof. A. Rehder (Arnold Aboretum, Jamaica Plain) ; Mrs. E. M. Reid ; Mr. H. N. Ridley ; Dr. Guy Roberty (French Sudan).

Dr. B. Sahni (Lucknow) ; Mrs. C. I. Sandwith ; Mr. Gunnar Seidenfaden (Copenhagen) ; Prof. W. A. Setchell (Berkeley, California) ; Dr. A. C. Smith (New York) ; Dr. N. J. G. Smith (Grahamstown, S. Africa) ; Miss L. Snelling ; Mr. J. D. Snowden ; Miss M. S. Sprague ; Mr. F. L. Squibbs (Seychelles) ; Miss D. B. Stafford ; Mr. W. T. Stearn ; Miss E. L. Stephens (Cape Town) ; Mr. Neil E. Stevens (Washington, D.C.).

Mrs. V. L. Täckholm (Stockholm) ; Mr. T. Tang (Peking) ; Dr. G. Taylor ; Mr. C. G. Trapnell (Mazabuka, Northern Rhodesia) ; Mr. A. W. Trethewy ; Mr. T. G. Tutin.

Mr. J. E. Vanderplank (Pretoria) ; Dr. Fr. Verdoorn (Leiden).

Mr. F. T. Wang (Peking) ; Mr. E. F. Warburg ; Mrs. Wedgwood ; Miss M. M. Whiting ; Mr. T. Lloyd Williams (Accra, Gold Coast) ; Dr. J. C. Willis ; Dr. S. P. Wiltshire ; Col. A. H. Wolley Dod ; Mr. W. C. Worsdell.

Dr. Y. Yamamoto (Taihoku, Formosa).

Distribution of Duplicates.

The following were the principal institutions to which duplicates were distributed :—

Great Britain.—British Museum (Natural History).

Europe and Orient.—Berlin, Botanic Gardens and Museum ; Brussels, Botanic Garden ; Florence, Botanical Institute ; Giessen, Botanical Institute ; Helsingfors, Botanical Museum ; Leiden, 's Rijks Herbarium ; Madrid, Botanic Garden ; Paris, Natural History Museum ; Sofia, University, Department of Botany ; Stockholm, Botanical Museum ; Tartu, Botanical Museum and Herbarium ; Uppsala, Botanical Institution ; Utrecht, Botanical Museum and Herbarium ; Wijster, Biological Station.

Asia.—Canton, Lingnan University; Nanking, National Research Institute of Biology; Manila, Bureau of Science.

Africa.—Pretoria, Division of Plant Industry.

America.—Buenos Aires, Botanical Laboratory of the Faculty of Agriculture; Berkeley, University of California; Chicago Field Museum of Natural History; Harvard University, Arnold Arboretum, Botanical Museum and the Gray Herbarium; New York, Botanical Garden; Philadelphia, Academy of Natural Sciences; Washington, D.C., United States Department of Agriculture, Bureau of Plant Industry and the United States National Museum.

Australia.—Brisbane, Botanic Museum and Herbarium; Melbourne, Botanic Gardens; Perth, State Herbarium.

The Library

The work of the Library has been carried on under difficulties owing to the shortage in staff mentioned in K.B. App. 1934, 42. Consequently it has not been possible to complete the new press-marking necessitated by the re-arrangement of the books on a subject basis, although some progress has been made in this direction.

The cataloguing of current literature is being kept up to date, but it has not been possible to deal with the very large arrears which had accumulated during and since the War, and a considerable quantity of literature is thus virtually unavailable for reference.

Important lacunae in the collection of standard floras and of anatomical and economic works have been filled by the purchase of books offered in second-hand catalogues. The card-index of desiderata started in 1934 has proved invaluable in this connection.

During the year 405 books were bound, rebound or repaired.

The Bentham-Moxon Trustees have presented the following works during 1935: Bonnier, G., *Flore complète de France Suisse et Belgique, Table générale*, Paris, 1934, the concluding volume of this useful illustrated work. Chomel, P. J. B., *Catalogus plantarum officinalium*, Parisiis, 1730, consists of a list of officinal plants classified according to therapeutic properties under the names given in Caspar Bauhin's *Pinax* or Jean Bauhin's *Historia*, with synonyms from the sixteenth-century herbalists. Deville, N., *Histoire des plantes de l'Europe*, Lyon, 1737, has descriptions and accounts of the medicinal properties of European plants, arranged according to Caspar Bauhin's *Pinax*. *Gerard's Herball: The Essence thereof distilled by M. Woodward*, London, 1927, is an abridgement of Johnson's edition of 1636. Guilandinus, M., *Papyrus*, is the first edition of a commentary on the three chapters on papyrus in Pliny's Natural History. Hunger, F. W. T., *The herbal of Pseudo-Apuleius*, Leyden, 1935, contains reproductions of the ninth-century manuscript in the

abbey of Monte Cassino and the first printed edition of Joh. Phil. de Lignamine. Illiger, J. K. W., *Versuch einer systematischen vollständigen Terminologie*, Helmstädt, 1800, is useful as a guide to technical terms used at that date. The Kew set of Mattioli's works has been enriched by the acquisition of his *Opusculum de Simplicium medicamentorum facultatibus*, Lugduni, 1571. Rolfinck, W., *Liber de purgantibus vegetabilibus*, Jena, 1667, though primarily pharmaceutical, includes short descriptions of various plants and drugs, and a learned account of Colocynth. Rondelet's *Dispensatorium*, Cologne, 1565, is bound together with Curio, J., *Conservandae bonae valetudinis praecepta*, Lugduni, 1577, a work of the Salerno school. Sethus, S., *Syntagma de cibariorum facultate*, Basileae, 1538, contains Greek and Latin texts of this work on dietetics, which was consulted by Fuchs in the preparation of his *Historia* (1542). Tallat, J., *Artzney Biechleinn der kreutter*, Augsberg, 1530, was evidently a very popular work in the early sixteenth century since 12 editions were published at five different German towns during the period 1497-1532. According to Haller, *Bibl. Bot.* 1. 244 (1771) and Pritzel, *Thes.* ed. 2, 319 (1872) the author's real name was Tollat ; the copy presented by the Trustees represents an unrecorded edition.

Mr. Henry Fraser very kindly gave Kew a number of the books which belonged to his brother, the late John Frazer, V.M.H. These included :—N. J. Andersson, *Monographia Salicum* ; J. G. Baker, *Handbook of the Amaryllideae* and *Handbook of the Irideae* ; J. E. Smith, *Flora britannica* ; and E. Step, *Wayside and woodland ferns*.

Lieut.-Col. Sir David Prain has continued to send various publications, including the current issues of several important periodicals.

The Royal Horticultural Society has presented its *Lily Year Book* (no. 4), and the Rhododendron Association its *Year Book*, with *Supplement*, each for 1935.

The New York Botanical Garden have continued to send, among other publications, *Brittonia*, the *North American Flora*, and two copies of *Addisonia*.

Volume 3 of the Flora U.R.S.S. has come, in continuation, from the Botanical Institute of the Academy of Sciences, Leningrad.

The Crown Agents for the Colonies have presented, among other publications, several reports of the Land Development Survey, Tanganyika Territory.

The British Museum (Natural History) have very kindly sent proofs of P—S of their supplementary catalogue, and the London School of Hygiene and Tropical Medicine part 2 of their classified catalogue.

The following books have been sent to Kew by their publishers for review in the Bulletin : Editor, American Midland Naturalist :—P. Weatherwax, *The phylogeny of Zea Mays* ; Messrs. Edward Arnold & Co. :—C. Elliott, *Rock garden plants*, C. E. Marshall, *Colloids in agriculture* ; Conservator of Forests, Assam :—U. N. Kanjilal,

P. C. Kanjilal, and A. Das, *Flora of Assam*, vol. i, pt. I ; Country Life :—H. D. Woodcock, and J. Coutts, *Lilies, their culture and management* ; Imperial Bureau of Soil Science :—*Bibliography of soil science, fertilizers and general agronomy*, 1931-34 ; Messrs. Macmillan & Co. :—W. C. Muenscher, *Weeds*, Edith A. Roberts, and Julia R. Lawrence, *American ferns*, The Lady Rockley, *Wild flowers of the great dominions of the British Empire*, G. A. Stevens, *Garden flowers in colour*, C. W. Wardlaw, *Diseases of the banana and of the Manila hemp plant* ; Melbourne Botanic Gardens :—A. J. Ewart, *Flora of Victoria* ; Messrs. Metcalf & Cooper :—G. O. Case, *British Guina timbers* ; Natal University College :—J. S. Henkel, *A field book of the woody plants of Natal and Zululand* ; National Museum of Wales :—H. A. Hyde, *Welsh timber trees*, ed. 2 ; Pharmaceutical Press :—Martindale & Westcott, *The extra pharmacopoeia*, vol. 2, ed. 20 ; Messrs. Putnam :—L. N. Sutton, *The cool greenhouse* ; Messrs. L. Reeve & Co. :—A. M. Ayre, *Wild flowers of Newfoundland*, pt. 3 ; University of Minnesota Press :—Josephine E. Tilden, *The algae and their life relations*.

The Editor of Nature has presented to Kew the following books, some of which have been reviewed by members of the staff : E. A. Bessey, *A text-book of mycology* ; D. Bois, *Les plantes alimentaires chez tous les peuples*, etc., vol. 3 ; J. J. Burgess, *The flora of Moray* ; I. H. Burkill, *A dictionary of the economic products of the Malay Peninsula*, 2 vols. ; W. G. Craib, *Flora siamensis enumeratio*, etc. vol. 2, pt. 2 ; H. Dunkin, *The pruning of hardy fruit trees* ; C. E. C. Fischer, *Flora of the Presidency of Madras*, pt. 10 ; A. Frey-Wyssling, *Die Stoffauscheidung der Höheren Pflanzen* ; J. Grainger, *Garden science* ; M. O. Johnson, *The pineapple* ; F. Marie-Victorin, *Flore laurentienne* ; W. C. Muenscher, *Weeds* ; J. H. Salter, *The flowering plants and ferns of Cardiganshire* ; K. M. Smith, *Plant viruses* ; Mary Stout, *Gardening for Egypt and allied climates* ; *Veröffentlichungen des Geobotanischen Institutes Rübel in Zürich*, 11 Heft.

Among the more important independent works received are the following ; presented by the authors unless otherwise stated : A. Agostinii, *Un codice Veneziano del* 1600 ; L. H. Bailey, *Gentes herbarum*, vol. 3, fasc. 6 ; R. W. Bond & C. Barrett, *Victorian ferns : descriptions of all the species occurring in the States* ; Botanical Congress, Vienna, 1905, *Propositions de changements aux lois de la nomenclature botanique de* 1867 *dont l'adoption est recommandée au Congrès international de nomenclature botanique projeté a Vienne en* 1905 (from Mr. I. H. Burkill) ; *Fungi exsiccati Succici, praesertim Upsaliensis*, 1-2 (from Botaniska Institutionen, Uppsala) ; G. A. Boulenger, *Revision des Roses d'Asie de la section des Eglanteriae, groupes des Pimpinelli—Suavifoliae, Orientales et Alpinae Vestitae* ; F. O. Bower, *Primitive land plants* (on permanent loan from Ministry of Agriculture) ; Louise A. Boyd, *The Fiord region of East Greenland* ; R. Bracher, *Field studies in ecology* ; C. E. B. Bremekamp, *A monograph of the genus Pavetta, L.* ; H. R. Briton-Jones, *The diseases and*

curing of cacao (on permanent loan from Ministry of Agriculture) ; B. Bunting, C. D. V. Georgi, and J. N. Milsum, *The oil palm in Malaya* (from the Director, Department of Agriculture, Kuala Lumpur, F.M.S.) ; I. H. Burkill, *A dictionary of the economic products of the Malay Peninsula*, 2 vols. (from the Crown Agents for the Colonies, on behalf of the Governments of F.M.S. and S.S.) ; A. C. Celsus, *Demedicina libri octo* 1665 (from Mr. H. N. Ridley) ; P. D. Chien Pei, *The Verbenaceae of China* ; H. Correvon, *Les orchidées rustiques*, 1893 (from Miss Elwes) ; H. Correvon, *La culture des plantes alpines dans le sphagnum* (from Miss Elwes) ; J. Costantin, *Aperçu historique des progrès de la botanique depuis cent ans* (1834-1934) ; A. Dickinson, *Les espéces survivantes tertiaires du Bas-Languedoc* ; B. A. Fedchenko nd othe s (Editors), *Flora Turkmenii* (from the Academy of Sciences, Leningrad) ; P. Font Quer, *Schedae ad Floram Ibericam Selectam*, Cent. 1 ; H. E. Forrest, *The Atlantean Continent*, 1933 ; J. S. Gamble, *Flora of the Presidency of Madras*. Part 10 (from the Secretary of State for India) ; B. Grant, *Note-book* and *catalogue* on which Major Bartle Grant's work on the Orchids of Burma was based (from Mrs. B. Grant) ; D. H. Hoppe, *Caricologia germanica oder Aufzählung der in Deutschland wildwachsenden Riedgräser*, 1826 (from Mr. H. N. Ridley) ; Isobel W. Hutchison, *North to the rime-ringed sun* ; H. H. Janssonius, *Mikrographie des Holzes*, Lief 12 ; R. Jørgensen, Karplantenes hoidegrenser i Jotunheimen (from Mr. J. M. Kindersley) ; S. Junell, *Zur Gynäeceummorphologie und Systematik der Verbenaceen und Labiateen* ; S. N. Kapur, *A Manual on the air seasoning of Indian timbers*, 2 copies (from the Manager of Publications, Delhi) ; S. L. Kessel, *Report on the indigenous forests . . . of New South Wales* (from Mr. C. E. C. Fischer); A. F. G. Kerr, *Reports of Botanical Tours in Siam* ; K. Krause, *Zur Flora von Ankara*, Heft 2 ; J. Lebrun, *Les Essences Forestières du Congo Belge*, 2 : *Les Essences Forestières des régions montagneuses du Congo oriental* ; A. Lemée, *Dictionnaire . . . des genres de plantes phanérogames*, vol. 6 (conclusion) ; C. Linné, *Oländska Resa* (from Miss M. L. Green) ; C. Linné, *Centuria* 2 *Plantarum*, 1756, photostat copy (from Prof. E. D. Merrill) ; C. L. Lundell, *Preliminary sketch of the phyto-geography of the Yucatan Peninsula* ; F. Marie-Victorin, *Flore Laurentienne* ; M. M. Martinez, *Aportaciones a la flora española plantas de Alicante* ; G. Masamune, *Floristic and geobotanical studies on the Island of Yakusima, Province Osumi* ; E. D. Merrill, *A commentary on Loureiro's " Flora Cochinchinensis "* (from the Secretary of the American Philosophical Society) ; P. A. Munz, *A manual of Southern Californian botany* ; T. Nakai and M. Kitagawa, *Plantae novae Jeholenses* 1 (from the Office of the Scientific Expedition to Manchoukuo, Waseda University, Tokyo) ; T. Nakai, M. Honda, and M. Kitagawa, *Contributio ad cognitionem florae Manshuricae* (from the Office of the Scientific Expedition to Manchoukuo, Waseda University, Tokyo) ; Dorothy Norris, P. M. Glover, and R. W. Aldis, *Lac and the Indian Lac Research Institute* (from the Director,

Indian Lac Research Institute) ; W. R. B. Oliver, The genus Coprosma ; F. W. Pennell, *The Scrophulariaceae of Eastern Temperate North America* ; J. W. Pont, *Physiological studies with seeds of Andropogon Sorghum Bort.* (from the Botanical Laboratory, Rijks Universiteit, Utrecht) ; *Report of the British Association for the Advancement of Science*, 1934 (from Miss Wakefield) ; *Report of the Kenya Lands Commission* (from Mr. H. Sampson) ; H. Resvoll-Holmsen, *Svalbards Flora, with an English translation* (in typescript) by Miss May Rathbone (from Miss Rathbone) ; E. J. Salisbury, *The living garden* ; H. Sargeant, *Flowering trees and shrubs* (from Dr. F. A. Rodway) ; E. E. Sherff, *Revision of Tetramolopium, Lipochoeta, Dubautia and Railliardia* ; M. Skene, *A flower book for the pocket* ; J. E. Spingarn, *The large flowered Clematis hybrids* ; T. A. Sprague, *Synopsis of proposals concerning nomenclature submitted to the Sixth International Botanical Congress, Amsterdam*, 1935 ; C. G. G. J. van Steenis, *On the origin of the Malaysian mountain flora*, part 1 ; N. Stojanoff and B. Achtaroff, *Studien über die Centaureen Bulgariens* (from Dr. W. B. Turrill) ; N. Stojanoff and B. Achtaroff, *Uber den Begriff und die systematische Stellung von Centaurea affinis Friv. und Centaurea pallida Friv.* (from Dr. W. B. Turrill) ; N. Stojanoff and B. Achtaroff, *Kritische studien über die Nelken Bulgariens* (from Dr. W. B. Turrill); C. P. G. Wade, *Mechanical cultivation in India* (from the Imperial Council of Agricultural Research, Delhi) ; Mary V. Walcott, *Illustrations of North American pitcherplants* (from Sir Henry Wellcome) ; F. B. W. White, *The flora of Perthshire* (from Mrs. Wedgewood) ; R. O. Williams, *Flora of Trinidad and Tobago*, vol. 1, part 6 (from the Director, Department *of Agriculture, Trinidad*) ; E. V. Wulff and V. L. Nilov (Editors), *Essential oil plants: their cultivation and essential oils*, vol. 1. (from the Library of the Institute of Plant Industry, Leningrad).

In addition to the continuation of most of the periodicals and serial publications recorded in previous Reviews, the following have been presented by the editors, societies or institutions issuing them, unless otherwise stated :—*Agricultural Journal of British Guiana*, vol. 5, no. 4, and vol. 5, nos. 1-3 ; *Apensos ao Recenseamento Agricola de* 1929-1930 (Direçcao dos Serviços de Agricultura da Colonia de Moçambique) ; *Arquivos do Instituto de Biologia Vegetal, Rio de Janeiro*, vol. 1, nos. 2-3, and vol. 2. no. 1 ; *Black Rock Forest Bulletin*, no. 5 ; *Boletin de la Sociedad Espanola de Historia Natural*, vol. 34, nos. 8-10, and vol. 35, nos. 1-9 ; *Brooklyn Botanic Garden Leaflets* (52 numbers) ; *Bulletin du Jardin Botanique de Buitenzorg*, Sér. 3, vol. 13, livr. 2, and *Supplément*, vol. 2, livr. 3–4 ; *Bulletin of Medicinal and Aromatical Plants*, vol. 1 (Director, Krasnaja Jorva Dutshiliskaaja 2, Simpheropol, Nilar, Crimea) ; *Bulletin of Medicinal and Technical Plants*, vol. 3 (All Union Scientific Research Institute for Medicinal Plants, Moscow district, U.S.S.R.) ; *East African Agricultural Journal of Kenya, Tanganyika, Uganda and Zanzibar*, vol. 1. nos. 1–3 ; *Euphorbia Review*, vol. 1, nos. 1–2 ; *Forest Products*

Research Records, nos. 1–5 (Department of Scientific and Industria Research) ; *Iconographia Plantarum Asiae Orientalis*, vol. 1, no. 1 ; *Journal of the Australian Institute of Agricultural Science*, vol. 1, nos. 1–3 ; *Journal of the British Honduras Agricultural Society*, vol. 1, nos. 1–4 ; *Journal of South African Botany*, vol. 1, pts. 1–4 (from the Director, National Botanic Gardens, Kirstenbosch, Newlands, Near Cape Town, S. Africa) ; *London Naturalist for the year* 1934; *Madroño*, vol. 3, no. 2 ; *Malayan Forester*, vol. 4, pts. 1–4 ; *Mededeeling van het Botanisch Laboratorium der Rijks-Universiteits te Utrecht*, nos. 1–3 ; *Proceedings of the 9th and 10th Annual Meetings of the National Shade Tree Conference* (from the Secretary-Treasurer, National Shade Tree Conference, New Jersey, U.S.A.) ; *Proceedings of the Birmingham Natural History and Philosophical Society*, vol. 16, no. 5, including *List of members and Annual Report for* 1933 ; *Revista Argentina de Agronomia*, tomo 1, nos. 1–4, and tomo 2, nos. 5–6 ; *Rodriguesia* ; *Revista do Instituto de Biologia Vegetal, Jardim Botanico e Estação Biologica do Itatiaya*, anno 1, nos. 1–2 ; *Scientific Papers of the Institute of Algological Research, Hokkaido Imperial University Sapporo*, vol. 1, no. 1 ; *Symposia commemorating six decades of the modern era in botanical science*, vol. 1. nos. 1–3 (from the Department of Botany, Iowa State College, Ames, Iowa, U.S.A.) ; *Travaux de l'Institut de la Systématique des Plantes et du Jardin Botanique de l'Université de Wilno*, nos. 4–6.

The Imperial Agricultural Bureaux, and various agricultural, botanical, and forestry departments and institutions in this country, in the overseas Empire, and in other countries, have continued to send their publications to Kew.

Numerous contributors to botanical periodicals have kindly sent their reprints to add to the large and increasingly useful collection at Kew.

The Ordnance Survey Office, Southampton, and the War Office have kindly continued to send maps as they are issued.

ROYAL BOTANIC GARDENS, KEW.

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